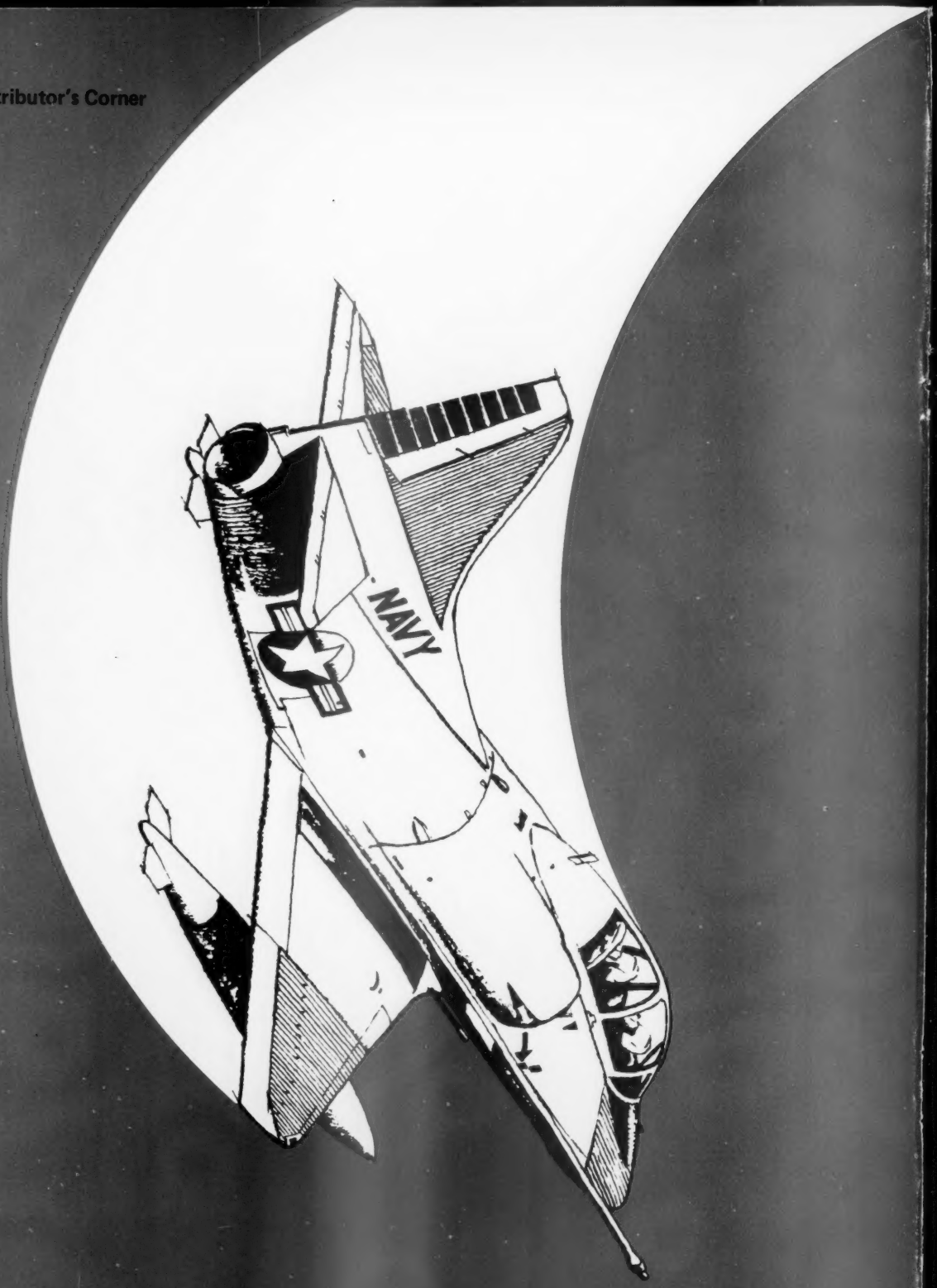
approach

APRIL 1976 THE NAVAL AVIATION SAFETY REVIEW


NAVY

SPIN/DEPARTURE TRAINING: A Must!

By LCDR Walt Honour, USN
British Empire Test Pilots' School

GRAMPAW Pettibone is wrong. There *are* old and bold aviators. These aviators never exceed aircraft controllability limits intentionally, but they do occasionally exceed them unintentionally, simply because they fly their airplanes to the limit. But when they do exceed their aircraft's limits, these old pros are able to recover because they've been there before, often in a controlled environment. It's the guy that finds himself in a spin for the first time during an ACM or DCM hop that's going to be disoriented and most likely be unable to recover. The Navy has about 20 of these out-of-control accidents a year. Therefore, we must expose our aviators to out-of-control flight in controlled circumstances so that we can cut our accident rate while simultaneously exposing our crews to the limits of the aircraft envelope.

If we routinely fly airplanes to their limits, we must recognize that occasionally we'll exceed the fine line between maximum performance and out-of-control flight. Everyone makes mistakes on the ground, and we cannot expect divinity in the air. Furthermore, I contend that if you haven't occasionally departed the airplane you fly, then you haven't flown it to its limits. This means you haven't been as operationally capable or effective as you could have been. I further contend that the pilots who have flown their airplanes to the limits – and occasionally exceeded them – are not only more operationally effective, but are probably safer in terms of their probability of having a spin-related accident. Why? Because they have encountered and successfully contended with the mysterious realm known as out-of-control flight.

About the Author. LCDR Honour was designated a naval aviator in 1968. After a tour with VA-37, he attended Naval Test Pilot School and subsequently worked in the Flight Test Division until 1973. After this, he was assigned as instructor in charge of the spin program at USNTPS and then as instructor in charge of the spin program at the British Empire Test Pilots' School where he is presently serving. He has departed/spun 15 different types of aircraft, including inverted spins in the T-34C, T-2, and TA-4.

I'm certainly not advocating purposely exceeding limits. I *am* advocating training to get the most out of your airplane – safely. I also acknowledge that spin/departure training must certainly take place at sufficiently safe altitudes and should not be done in airplanes that have clearly unrecoverable spin modes or prohibitive structural considerations. If it is not deemed safe to conduct this type of training in a particular aircraft type, then normal squadron training should periodically be supplemented with out-of-control flight training in another type of aircraft.

You might ask why it's necessary to fly right to the controllability limits. My answer is simply "to turn the airplane as fast as possible." Please note that I am purposely neglecting any energy loss considerations. I also accept that my argument is not valid beyond maximum lift coefficient. There is no advantage or reason to fly beyond maximum lift coefficient. However, in most USN/USMC airplanes, up to a recognizable aerodynamic stall or the aft stick stop, there is an increase in lift coefficient for an increase in AOA. This increased AOA results in a G increase which means that the airplane turns better. For example, any airplane at 5G and 500 knots true airspeed can instantaneously increase its turn rate and decrease its turn radius by approximately 20 percent simply by pulling to 6G. This substantial benefit theoretically gained by the 1G increase would require an increase in AOA (true airspeed constant), which places the airplane closer to or possibly beyond its controllability limits. I must also point out that turning airplanes rapidly is not restricted to fighters in ACM. There is a need to do this in airplanes like S-3s in ASW tactics, P-3s with an engine fire at decision height in bad weather (acquiring the runway heading), or attack aircraft in DCM or target area maneuvering.

Remember also that any discussion of controllability limits must include sideslip (some say "yaw rate"). Simply stated, an aircraft will go out of control at a lower angle-of-attack if sideslip exists than if it is in

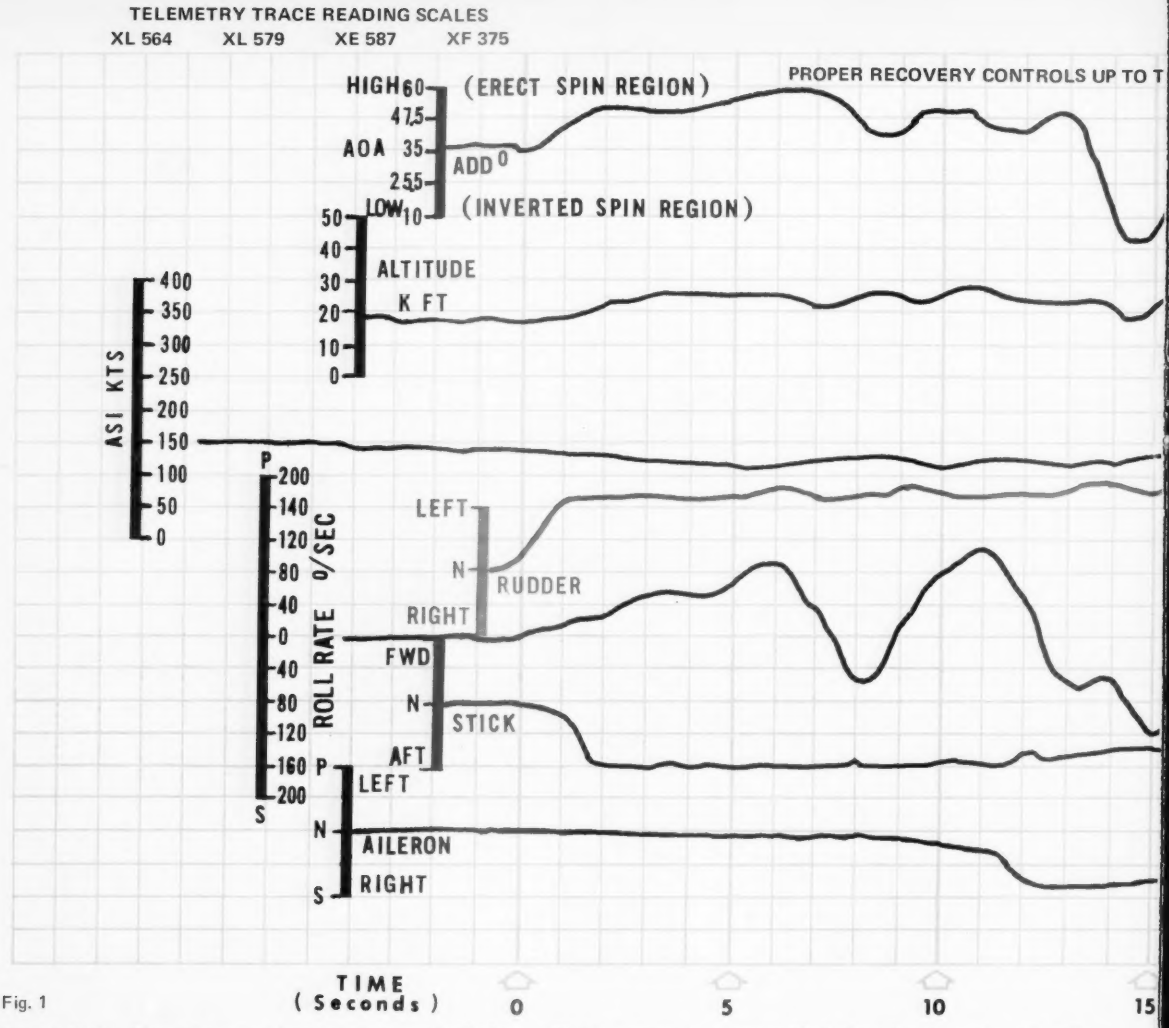


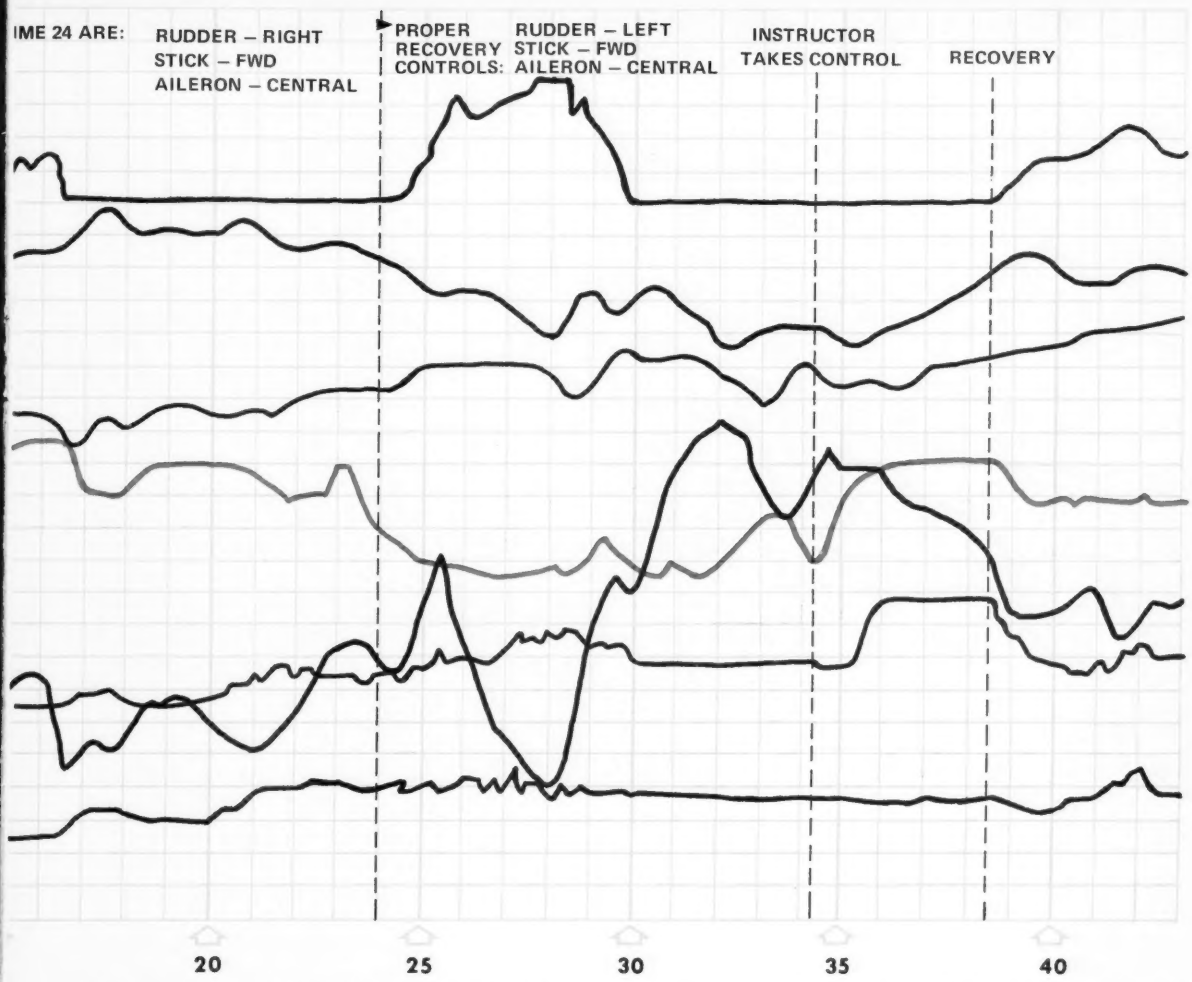
Fig. 1

balanced flight. Yaw rate considerations are particularly critical in our new generation of vertical takeoff aircraft.

So, we must fly airplanes that do spin – or at least depart. For this reason, we must be properly trained in out-of-control flight. Clearly, it is safer to first encounter out-of-control flight in a controlled situation rather than an unexpected one. This is why spin training should ideally be part of every phase of flight training. And this is one reason, I'm sure, that the Naval Air Test Center recommended departure training in the A-7. Furthermore, the Test Center has recommended Fleet departures/spins in several other airplanes, but these recommendations have rarely been implemented. Even if spin training is determined not to be feasible, we can and should train for departures. With proper departure training, spin recovery training would be unnecessary because proper departure recognition and recovery can eliminate the conditions that cause most spins.

But whether your first experience with out-of-control flight comes in a controlled situation or not, you can expect to be confused and disoriented initially. As a spin instructor at two test pilot schools, I've had the privilege of flying with many experienced pilots. Several of them were very confused when initially subjected to an aircraft condition where the bird does not respond to flight controls as they had been conditioned to expect.

Figure 1 depicts a telemetry trace of a spin profile during a typical spin flight. The aircraft was a British *Hunter,* which is very similar to the TA-4. This spin occurred after a thorough briefing on the ground where the "experienced" pilot (fighter pilot at that) clearly satisfied me that he knew his spin recovery procedures cold. The planned maneuver was a normal erect spin which was properly entered at time 0. Ten seconds after the pro-spin control applications were made, the pilot got careless with the ailerons and found himself shortly thereafter in an unexpected inverted spin – his first, by the way. I might also mention that ailerons do have a



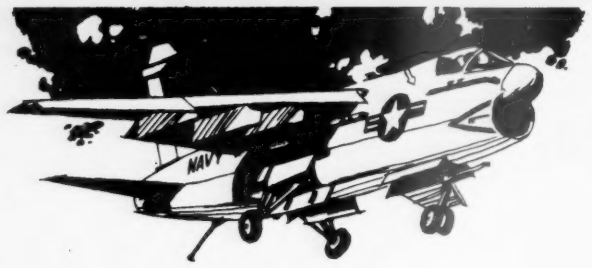
tendency to do nasty things in several other airplanes at high angles-of-attack.

Well, to make a long story short, this experienced pilot was completely lost. By luck, the airplane even recovered briefly (mostly on its own) at time 26 seconds, but the pilot didn't even recognize it, and the spin direction reversed. Finally, at time 34 seconds, I took control, applied the proper recovery controls, and the aircraft recovered 4½ seconds later.

Hopefully, this example, which I point out again is not atypical, will open your eyes. It certainly opened the "experienced" pilot's eyes. In spite of all his flight time and overall experience – some of it even in this particular aircraft type – he had not been properly trained in this flight regime. He even told me in the brief that he had a buddy who couldn't recover from a spin and he couldn't understand why because his friend was very experienced. I reiterate that I've had several experiences similar to the above example. In almost every case, the experienced pilot, after subsequently learning to successfully recover from various maneuvers, has always stated that he thinks there should be more training in this area. I personally feel that several departure/spin-related accidents would not have occurred if the pilot had proper training in the out-of-control flight regime.

In conclusion, I strongly recommend flying airplanes to limits of their controllability. It not only increases operational capability, but it also promotes safety if done properly. But in order to fly to the limits, you must know your procedures cold. The NATOPS procedures will always work and be entirely accurate. Well, as a spin instructor, I'll say they'll work 99.9 percent of the time. I'm sorry, but in this complex subject of out-of-control flight, one can *never* say "always." If it's any consolation, you can remember that accidents always happen to the other guy; but as far as I'm concerned, you're the other guy. ◄

AIR BREAKS



Give 'em Room. One morning, an order was given to tow an E-2 from the hangar to the line for the day's flight schedule. The aircraft was parked, preflighted, and the crew prepared to start engines.

Meanwhile, the linecrew of another squadron towed out one of their E-2s and parked it about 20 feet away. The plane captain of the first E-2 requested the second crew to respot with more room between the two aircraft.

Obviously, with both planes parked so closely, there would be barely enough room between the two for the starting unit to pass. The senior petty officer of the second *Hawkeye* said he had spotted his aircraft where he was told, and he wasn't about to move it.

The crew of the first E-2 went about their business very carefully and completed the turnup. However, in positioning the yellow gear, they had to pass much too close to the prop arcs of both aircraft. Fortunately no mishap occurred.

When more than one squadron has to share the same line area, particularly a ramp area which is not painted (as in this case), there must be mutual *cooperation.* There is no room for "rights" or hardheaded attitudes. Safety and common sense demands spacing that allows plenty of room between aircraft on the line.

Let's Hear It for Landing Lights! What started out as a routine training flight nearly ended in disaster. A crew in their SH-2F was shooting a twilight GCA to a busy naval air station. The HAC was flying the approach from the left seat; his copilot was in the command seat; and an observer was in the sensor operator's seat.

The helo was on final, at 1000 feet, straight and level, about to intercept the glide slope. The observer saw another aircraft level, at 9 o'clock, turning into the helicopter. When advised, the HAC looked up, saw the other bird, and took evasive action by making a diving, starboard turn. They didn't collide.

GCA did not advise the helo pilot of *any* traffic, let alone *converging* traffic! The other aircraft had been in the bounce pattern shooting touch-and-go's.

There was a communications breakdown between tower and GCA controllers – neither one was aware of the situation. The other aircraft had its landing lights on; that's how the observer picked him up. Airborne visibility barely met VFR requirements due to haze and smoke.

After evasive tactics proved successful, the helo pilot experienced other communication difficulties. On his assigned frequency, he could hear another GCA controller crossfeeding into the helo frequency. The controllers later said that their equipment, outmoded and outdated, often caused crossfeed between frequencies. They also acknowledged they were having trouble with their receivers.

From the details of this near-midair, it's easy to see why:

- Those landing lights, day and night, need to be ON.
- Further emphasis on crew lookouts is needed.
- Outmoded equipment should be replaced as soon as possible.
- Each air station needs to have positive coordination between controllers.

Taxi lights in the landing pattern certainly help detection. But what aircraft **really** *need for all areas of flight are strobe lights. – Ed.*

APPROACH is a monthly publication published by Commander, Naval Safety Center, Norfolk, VA 23511. Subscription price: $11.70 per year; $2.95 additional for foreign mailing. Subscription requests should be directed to: Division of Public Documents, Government Printing Office, Washington, DC 20402. Controlled circulation postage paid at Norfolk, VA.

Flying Circus? The flight of three F-4s was briefed as a launch to the ship for touch-and-go's and a "Fly aboard." The flight lead was a first tour lieutenant junior grade; the mission commander, a second tour RIO in the flight lead's back seat. The flight was briefed to break from a V-formation with the left wing breaking first, followed by the lead, and then the right wing. Aft of the ship, the flight lead lost his compass, passed the lead to No. 2, and then crossed under, establishing himself as No. 2 (right wing).

The break, pattern, and touch-and-go's were uneventful. After two touch-and-go's, the air boss directed the aircraft to "Delta," so that he could deck launch two CODs.

Arriving in the Delta pattern, the flight lead noted that the two wingmen had rendezvoused in the original V-formation. Descending out of Delta for their second breakup, the lead started experiencing ICS problems. He decided to go ahead and break the flight and, if his problems continued, he would return to the beach. As the flight passed the bow, the lead glanced over his left shoulder, but did not see his left wingman. He assumed they had gone to echelon (but did not establish this fact). He kissed off No. 2 and broke – missing his left wingman by an estimated 15 feet. As it turned out (fortunately), No. 3 was flying low and sucked. The mission commander in flight lead's back seat said nothing because he had lost his ICS. All aircraft recovered and landed safely aboard . . . but shaken.

Comment. A small distraction, followed by the unwarranted assumption that the wingmen were "doing their own thing" almost resulted in a catastrophe. Accountability and discipline are as essential in routine operations as they are in combat or emergency situations. The flight leader must maintain positive control of the flight at all times. This means that wingmen move only when directed. More than one midair has been caused by wingies moving on their own initiative.

That's Two. Last Spring, a helicopter squadron had one of its birds involved in a close call when a big Public Works crane was towed right across the departure end of the runway during daylight. Luckily, the pilot saw the moving obstruction just after launch and aborted his takeoff. That's one!

The same thing happened 6 months later, except it occurred at night. A CH-46 crew was shooting touch-and-go's on Runway 27. The departure end of the runway is 150 feet short of a heavily traveled air station road. This time the copilot spotted the 140-foot-high crane as it was being moved across the departure end again. It was devoid of any lights and if it hadn't been for some strong background lighting from a softball field, the crane wouldn't have been sighted.

These incidents point out the need for reemphasis of the dangers of crane movement. The air station has forbidden movement of cranes near the heliport in the future unless clearance to proceed is granted by operations.

Helicopter Fueling Problem. The pilot of an SH-2F was hovering his helicopter alongside a DD during a HIFR (helicopter inflight refueling) exercise. A fuel sample had been taken on deck by the ship's crew and then the hose was raised and brought into the helo cabin by a flightcrewman.

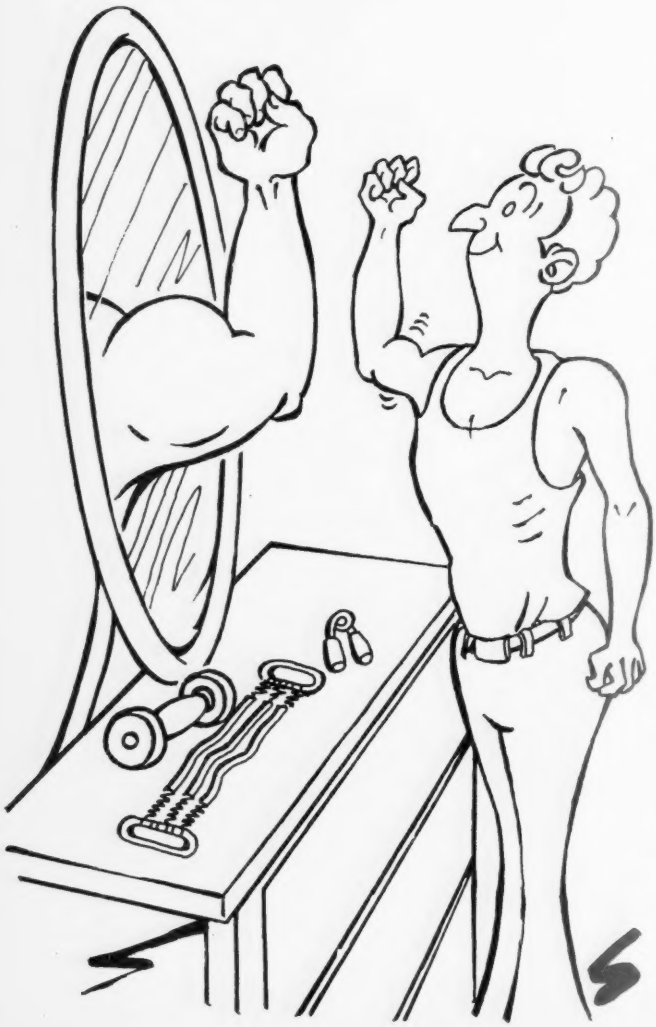
Before inserting the nozzle into the fuel receptacle, the crewman unintentionally tripped the fuel petcock. Fuel sprayed on his visor, neck, and chest. Some fuel also sprayed into the cockpit.

The crewman was unable to trip the breakaway because he was blinded. So he lowered the hose to the DD deck and it was detached from the hoist. The pilot waved off and circled to land. His crewman was dizzy and disoriented when he got out of the helicopter, but recovered fairly quickly.

It was discovered that the hose was pressurized. (The pressure after the incident read 3 psi, but was probably higher at the time of the incident.) The squadron recommended that ship refueling crews be reminded of the importance of draining all fuel out of the hose prior to pickup by the helo crewman. NWP-42(A) requires this. Also, the squadron recommended a modification to the fuel sample petcock (press then turn) to prevent its opening by inadvertent contact. ◄

A retarded approach to physical fitness

By LT A. R. Thompson
VT-27



THE Navy physical fitness program has always left something to be desired and probably always will. In the past, it has been a cumbersome, ill-defined, unmanageable mess at best. Neither requirements nor program administration was realistic. As an example, the quarterly 300-yard shuttle run will long be remembered as an exercise in absurdity by those whose lives passed before them on the last leg.

But the basic problem with the old program was that everyone ignored it. Those who were motivated to maintain physical fitness worked out on their own, anyway.

The deficiencies of the program were recognized, however, and as a result, OPNAVINST 1500.22B redefined physical fitness and the entire fitness program for the Navy. The approach was basically something for everyone – stay fit doing your own thing with a universal scoring system. Aerobics . . . Sounded great!

Unfortunately, though, instructions can be changed until the sky falls down, but even if one hits on a workable solution, the problem of administering a meaningful program in an organization such as an aviation squadron is still formidable.

What is the answer? A completely voluntary program may/will not work as borne out by past experience and present attitudes. Furthermore, to manage a program that would allow everyone time off to perform PT during working hours would be a nightmare of priorities.

Why then should we even have a physical fitness program? If we discount self-satisfaction brought about by feeling and looking better, physical fitness should still be sought as something inherent in the professionalism of flying. The increasing physical demands of aviation require physical fitness of the pilots if they are going to operate at peak effectiveness. A casual glance around any Navy squadron readyroom will show that some percentage of pilots/aircrew do not meet this requirement.

The guy who is overweight for 11 months out of the year but starves to pass a physical is not kidding anyone. Without constant monitoring, you can't force a person to be physically fit any more than you can force someone to be safe. A good PT program, like a good safety program, requires participants to believe in what they are doing and to see valid benefits.

This article is aimed at the already-jock (who may find new reasons to perspire), the non-jock (who may become motivated to), and the avid Happy Hour attendee (who may finally decide to equalize his exhaust with his intake). Even with this spark of motivation, the realities of fitness require some new incentives – some gross innovations.

Rationalization is the answer. The correct rationalization procedure will allow us to justify absolutely anything – from keeping P-2s and T-28s in the Navy inventory to a new, sobering approach to physical fitness.

As fortune would have it, the program I have developed has been tried, tested, and certified (by a select committee of one) to be all that it could ever claim to be. Some of the proven benefits are:

- Look and feel better.
- Lower heart rate and blood pressure.
- Develop mental toughness.
- Eat less.
- Drink less.
- Enjoy running more.

To derive these (and other) benefits, you must overcome:

- Motivation (to do other things).
- Threat of physical pain and suffering.

This cannot be accomplished overnight. Only over a period of time can your mind and body adjust. It is, however, simply a matter of training and self-discipline.

To fully understand and be able to identify with this program, you must master the basic principles and attendant corollaries.

Basic Principles

1. The more you eat and drink, the more you must run.
2. Beer tastes great.
3. Running (exercise) causes pain and suffering.

Corollaries

1. The more you run, the more you can eat and drink.
2. Beer tastes best when you are hot and sweaty.
3. The pain and suffering cease when you stop running (exercising).

Remember that corollary No. 1 is the most important concept.

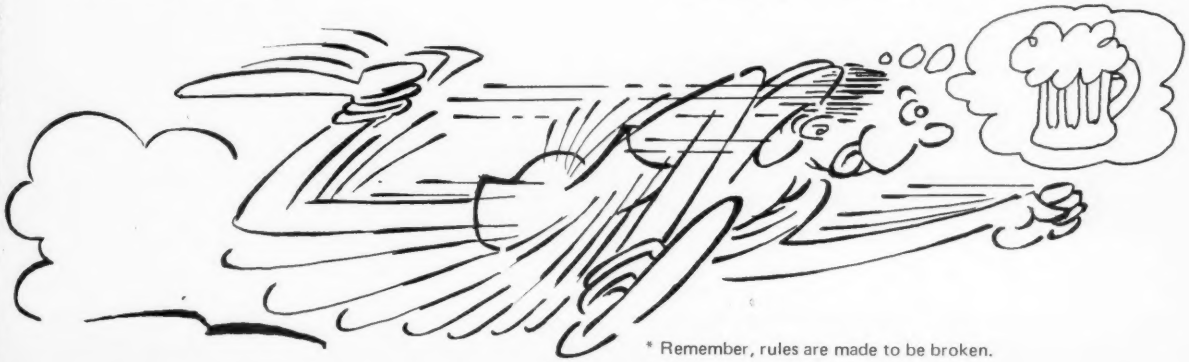
Start slow and work up to a more extensive schedule. Warm up sufficiently prior to exercise. Take salt tablets as needed (or put extra salt in your beer after workout). Drink extra liquid. Do not consume alcoholic beverages immediately after exercise (wait 5 minutes). Obtain a good pair of sneakers. Avoid running on hard surfaces, if possible. Coordinate your running with your flying; i.e., don't go directly from the gym to the cockpit. Run when you are hungry – your hunger will soon disappear (replaced by genuine pain). You will only *think* you are hungry.

Rules

1. Try to run every day. *
2. Never miss more than 1 day in a row.
3. Never miss running the day after a big party, Happy Hour, etc. *
4. Run in the hot part of the day. *
5. Drink water, *Gatorade,* and beer. No soft drinks.

Some side benefits of this conditioning program will be very helpful in your flying. Multiengine and helo pilots will develop the reflexes and catlike quickness to enable them to smack the copilot at least three times before he touches the wrong switch. Single-engine prop instructors will be able to keep the students from banging the engine on mag checks.

Jet types will develop the stamina to survive even longer readyroom and Happy Hour bull sessions – not to



* Remember, rules are made to be broken.

mention the coordination to demonstrate a three-plane ACM flight including overhead maneuvers without breaking their wrists.

The ravings of a lunatic, you say? Hardly! The author is convinced that he is not crazy.

Faster than a speeding bullet, more powerful than a locomotive, able to leap . . . these, too, can be all yours. All it takes is willpower, perseverance, and a tendency toward masochism. But the first step is starting a program.

If you have no activity preferences already, below is a chart that might help you in starting a PT program:

TCO Points

100 = 1 TCO *

Activity		Time/Distance	Points
Rugby		20 min.	200
		40 min.	300
		60 min.	600
Football		20 min.	25
		40 min.	60
		60 min.	100
Basketball		20 min.	25
		40 min.	75
		60 min.	100
Running	1 mi.	7 min.	35
	3 mi.	24 min.	100
	5 mi.	45 min.	180
Paddleball/Squash		30 min.	50
		60 min.	100
		90 min.	200
Biking		60 min.	150
Tennis		60 min.	50
Golf		36 holes	100
Bowling		1 line	15
Sex		Classified	
Flying	Jets	1 hr.	25
	P-3	1 hr.	05
	C-9	1 hr.	04
	P-2	1 hr.	300
	T-28	1 hr.	100
	T-34	1 hr.	05
	S-2	1 hr.	50
	C-1,E-1	1 hr.	51
	C-2, E-2	1 hr.	10

* Tall cold ones

The ideal progress chart will show a straight line if you plot TCO intake multiplied by your weight and divided by the number of days you are able to get out of bed.

Sound advice? Judge for yourself. Better yet, see your flight surgeon or physician before you start on any program if you have been inactive for any length of time. ◄

You've reached middle age when all you exercise is caution.

Ace L.

ELECTRICAL FIRE!

What was to have been a routine SH-3 passenger flight from a foreign base to a carrier almost turned to disaster when the acrid smell of electrical fumes filled the cockpit.

After a long wait on deck, the H-3 was cleared to lift to join a sister helo awaiting passengers. But just before lifting, an unusual noise was heard in the transmission area. The No. 1 engine condition lever was retarded and accessory drive selected.

When the No.1 engine was returned to 104 percent N_f/N_r, the generator caution light illuminated. The generator was cycled once and then turned off, but not before a strong, electrical, burning odor was noted. The rotor system and No. 2 engine were secured and the tower advised of the problems.

A crewman jumped out of the helicopter, made a visual inspection of the exterior of the aircraft, but didn't notice anything unusual. He then climbed up to the starboard transmission platform and saw a fire in the portside of the transmission accessory section.

The crewman gave the cut and figure eight signal to the HAC and reentered the cabin to get the portable fire bottle. The pilot shut down No. 1 engine in accordance with the engine fire shutdown procedures. The crewman climbed onto the port transmission inspection platform and discharged the fire bottle into the accessory section. The fire persisted, but not for long. The base firetrucks arrived and extinguished the fire completely.

The No. 1 generator was destroyed by fire and the surrounding area sustained fire damage. The generator had cracked and separated at the aft end of all six airhole ribs, rotated 90 degrees clockwise, separated from the mounting flange, and came to rest on an oil lube line. The generator drive shaft had not broken at the shear point, but failed about 2 inches aft of the splined end. There was no evidence of main gearbox damage.

Many messages from squadrons, ships, and NAVAIRSYSCOM have addressed problems associated with flange cracks. Required inspections have been conducted regularly, and no cracks had been detected on this bird. The generator was installed about 6 weeks before the incident to replace a generator that had excessive cracks in the mounting flange area. This one marked the thirteenth generator in squadron helos removed for cracks/failure of the housing in the previous months.

9

The squadron made several recommendations:

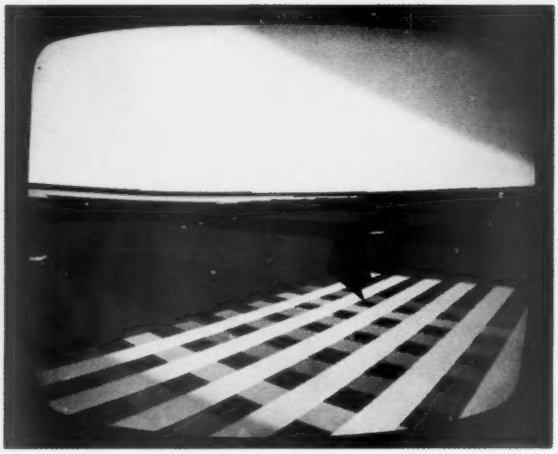
- Reevaluate interim generator inspection procedures or establish a mandatory time limit between inspections for all generators.
- Install a fire detection system or an inflight visual inspection capability of the transmission accessory section.
- Reevaluate effectiveness of the generator shaft shear point.
- Install a fire extinguishing system in the transmission section.

Although not directly related to the generator problem, the squadron proposed two other safety recommendations:

- Install a walkaround ICS system for crewmen, or at least provide an external plug-in capability for SH-3 aircraft.
- Develop a standardized hand signal for ground personnel to alert the pilot to a fuselage fire (other than engine).

The crew of this bird were lucky the incident occurred on the deck. The rapid response of the base firemen prevented a strike. Had the generator failure and ensuing fire occurred in flight, there undoubtedly would have been a catastrophe. ◄

A [computer-generated] picture is worth 1000 words.



Turning downwind at Yankee target.

By LT C. L. Evans
TRAWING TWO

IN the summer of 1972, a new device was delivered to the Chief of Naval Air Training for evaluation. The device was the first of a new generation of simulators employing a computer-generated visual display which enabled the TA-4 2F-90 flight simulator to be expanded for use in the VFR flight regime. The device is capable of all the functions of the nonvisual 2F-90 simulator plus many which are unique in the world of simulation. Examples include: presentation of any one of a number of visual scenes, accurate meatball simulation, bomb scoring, and visual catapult launches.

The most significant aspect of simulator function is that the student actually controls the visual scene through cockpit control inputs rather than merely reacting to a preprogrammed visual stimulus presented to him.

Following a long period of evaluation, use of the device (dubbed the 2F-90 CGI ADM* by the engineers and referred to as The Visual by the operators) was instituted in the Familiarization Stage of the advanced student syllabus. Extended use in this phase has produced improvement not only in student performance in the aircraft but also in student and instructor satisfaction with the overall capabilities of the device. The major area of benefit has been the practice provided in VFR procedures and techniques. The addition of a carrier visual presentation has made student instruction in CQ possible with much the same results as those experienced in FAM stage. The real benefit of the simulator, however, has proven to be in the weapons delivery phase of the syllabus. Bomb instructors have noticed a significant improvement in the student's ability to fly the pattern and develop the principles of bombing as a result of incorporating simulator flights into the weapons stage.

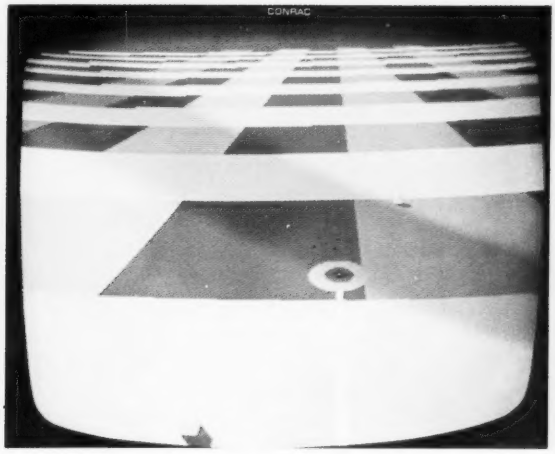
Student instruction in WEPS stage was instituted in April 1975. After a short period of instruction, it was evident that the students who had had several hops in the simulator were, to a significant degree, outperforming those who had not. We found that the

* Computer Generated Imagery Advanced Development Model

Bomb Rack	Relative Bearing of Hit/Distance	IMN at Release (Desired: .68)	Dive Angle (Optimum: 30 deg)	Altitude of Release (Desired: 3300 ft)
Sta 3	225 deg/00051 ft	Mach = .685	DA = -25 deg	Alt = 03110 ft AGL
Sta 3	297 deg/00084 ft	Mach = .678	DA = -27 deg	Alt = 03223 ft AGL
Sta 3	325 deg/00116 ft	Mach = .680	DA = -31 deg	Alt = 02876 ft AGL
Sta 3	004 deg/00116 ft	Mach = .679	DA = -31 deg	Alt = 03015 ft AGL
Sta 3	238 deg/00036 ft	Mach = .691	DA = -27 deg	Alt = 03004 ft AGL
Sta 3	039 deg/00059 ft	Mach = .693	DA = -29 deg	Alt = 02899 ft AGL
Sta 3	217 deg/00047 ft	Mach = .691	DA = -26 deg	Alt = 02871 ft AGL
Sta 3	152 deg/00068 ft	Mach = .684	DA = -30 deg	Alt = 02980 ft AGL

Fig. 1

Abeam.



Rolling in.

simulator was at its best when used to instruct basic techniques of error analysis during dive deliveries. The real key to the value of the simulation is the hit-spotting program which provides the instructor with real time readouts of release altitude, release mach number, dive angle, and hit position (relative bearing and distance from the bull). (See Fig. 1.)

The visual presentation of the target area is a graphic depiction of the target and consists of 80-, 150-, and 300-foot rings and numerous section lines and hashmarks which provide the depth and velocity cues necessary for VFR weapons delivery. Utilization of the weapons delivery simulation prior to the first instructional hop in the aircraft provides the opportunity for the student to sharpen his eye and test his correction technique. The instructor may also introduce any of a multitude of factors affecting mission completion including adverse weather, aircraft malfunctions, variable winds, and many others affecting flight safety.

The quality of instruction and resultant student performance have increased noticeably since the introduction of The Visual into WEPS stage. Student and instructor reactions have been, without exception, favorable. The system has enabled the instructor to provide the student aviator with a high degree of realism and a method of evaluation which, until now, has been unavailable even in the aircraft.

The implications of our experience with The Visual are obvious. Right now, we are capable of ensuring, through expanded and diversified instructional techniques, that the newly designated naval aviator will have, during his undergraduate training, dealt effectively with the complex problems of weapons delivery in a manner which will prepare him for future operations in Fleet aircraft. As 2F-90 CGI technology improves and further assets become available, additional areas of the training syllabus can be included in the simulator syllabus. Based on our experiences with weapons stage, this will provide one more aid that will enable the Naval Air Training Command to continue producing the best trained pilots in the world.

A few years ago the seatpan depressor I saved on a night bad weather approach and landing was my own. I wonder why "they" don't . . .

Reinstall VORs in tactical jets

By Capt Joseph F. Scholle, USMC
MCAS Cherry Point

THE incident occurred while I was flying T-33s at NAF Washington. I was inbound one night and listened for the weather. I heard:

"This is Andrews information Golf, 0100Z, 300-foot overcast, 1 mile visibility in fog, duty runway 01 left, altimeter . . . "

It wasn't so hot, but it wasn't time to head for my alternate either. Everything was humming along well. My fuel was no problem, the navaids were OK, and my radio had been loud and clear on the previous transmission. It was time to try it again.

"Washington Approach, this is Marine 37936, Brooke, 16 thousand."

"Marine 37936, Approach, Roger. Turn right to 090, descend to 12 thousand, contact Andrews Approach on 301.5."

"This is Marine 37936, Wilco. Turning right to 090, out of 16 for 12 thousand, switching to Andrews on 301.5."

A quick twirl of the dials followed while visions of home danced in my head. Oops, what was that? I heard a rather sickening pop, giving me the feeling that the ARC-27 had once more died of old age. Well, I'll give 'er a go anyway.

"Andrews Approach, Marine 37936 passing 14 for 12, over."

No joy; my NORDO suspicions were confirmed.

Indeed it was a sticky situation. It was night; I was IFR, solo, and going into a high-density area. But then, out of the past came the recollection of a lost communication procedure – I'll use the VOR as a backup receiver. What VOR? Why the one installed in all of our T-33s.

So I gave it another try.

"Andrews Approach, Marine 37936, broadcasting in the blind, listening on 113.1."

Shortly I heard, "Marine 37936, this is Andrews Approach on 113.1. If you read, squawk ident." Then I hear, "Roger ident." Joy! Contact again.

An uneventful VOR approach and GCA pickup followed. I landed, taxied in, and found out the transmitter was OK, but my receiver was kaput.

At that time I was the T-33 NATOPS officer at the HQMC Flight Section at NAF Washington. We had 12 T-birds TACAN- and VOR-equipped and received many kudos for our aircraft from the proficiency pilots who flew them. The VOR installation "saved the bacon" many times. We were fortunate enough to have VOR, while today's aviators have no such backup in their tactical jets. True, they have an aux UHF receiver, but it's no match for a VOR for a number of reasons.

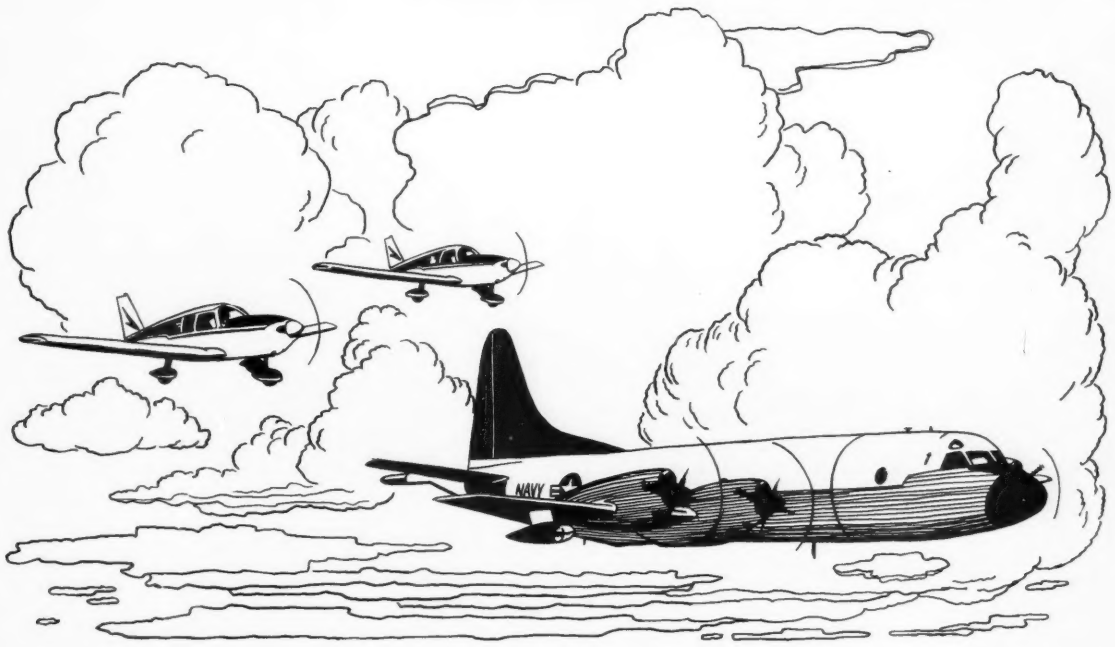
Many years ago VOR was standard equipment in jets. What happened? I know; TACAN for one thing, and someone said the desire to "improve the breed," whatever that means. Like so many old ideas, VOR is one that has come of age again. Consider the advantages: localizer and VOR approaches; improved airways navigation (especially outside CONUS); inflight advisories by Centers in the event of UHF failure. Coupled with TACAN, it would give each aircraft a truly worldwide capability, something deployed units can really use.

Safety is another prime consideration. How many aircraft and crews have we lost due to failed comm/nav equipment when an alternate navaid would have saved the day? Too many, even if it's just one. True, it would cost money, of which there is precious little these days, but consider the cost of one F-14 saved. Costs justified, program PAID.

Patrol squadrons perform a variety of missions such as ASW, shipping and ice patrols, reconnaissance, mining, and search and rescue. Here's the story of a successful . . .

SAR Alert!

By LCDR C. D. Shields, Jr.
VP-17



CREW Nine of VP-17, headed by LT Jim Carlson, assumed the 1-hour SAR alert watch for the mid-Pacific area one day. The squadron had temporarily relieved the Coast Guard detachment at Barbers Point.

The crew made its preparations well. A complete SAR folder and kit had been placed aboard the search-and-rescue aircraft, and the crew was well briefed. Just before noon the call to launch was received, and Crew Nine was airborne within 30 minutes.

LT Carlson received vectors from Honolulu Center to the last reported position of two *Cherokees* on a flight from California. The two light planes had already been airborne for 20 hours, and their only navigation aid was the ADF.

Eventually, by using the P-3 radar and sharp lookouts, the *Cherokees* were spotted in loose trail formation about 130 miles east of Honolulu. Communications were established on 121.5, and it was learned that the *Cherokees* had less than an hour and a half fuel remaining. They had no idea where they were and were not using maximum range cruise.

Honolulu Center was advised by the P-3 crew that they had the *Cherokees* in sight, and when asked, the Center quickly obtained recommended max cruise settings, which were passed to the *Cherokee* pilots. Also, a block altitude clearance was issued to all three aircraft. They altered course toward MCAS Kaneohe.

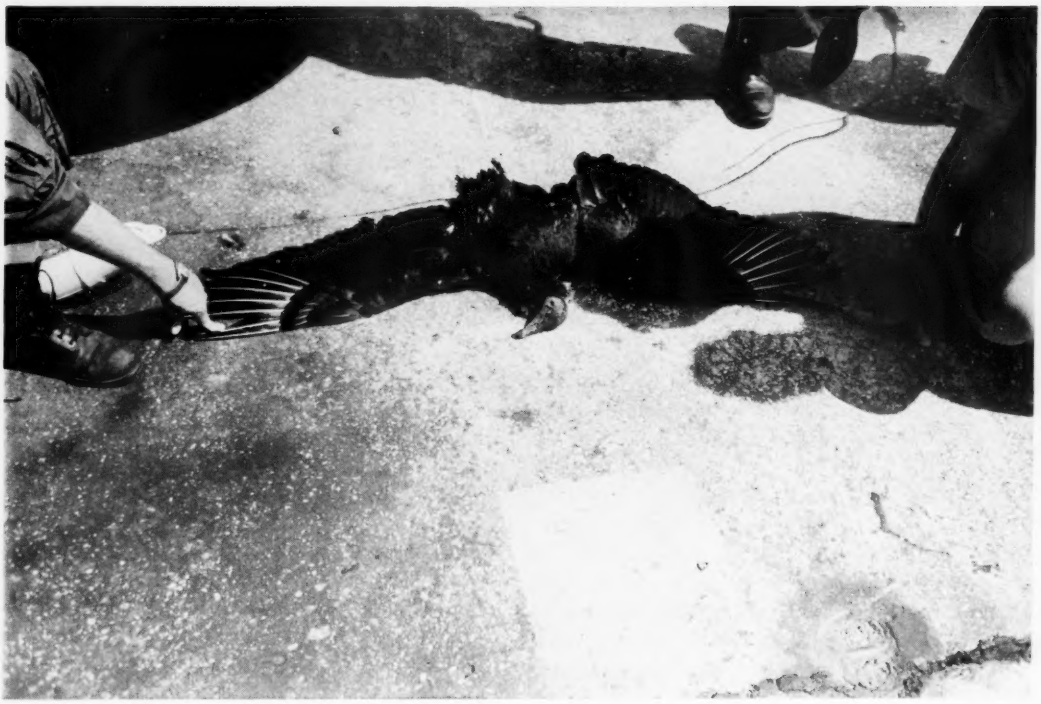
The *Orion* pilot slowed down and the two *Cherokees* pulled into a loose formation. The P-3 crew provided navigation, weather, and landing information. Before reaching Kaneohe, it was necessary to lead the *Cherokees* through and around thunderstorms with the least possible deviation from course.

Six miles from the field, with the runway in sight, the *Cherokees* were handed off to the tower. A Coast Guard helicopter and LT Carlson's P-3 orbited the area while both light-plane pilots made uneventful landings.

Take a bow, Crew Nine, for a first-class save! ◄

By ENS Gary A. Kohler, USN
HT-8

Feathery Midair



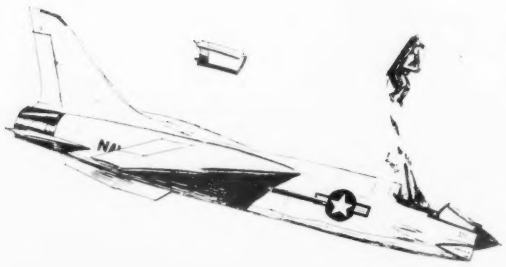
DOWN WITH VISORS; THEY'RE FOR THE BIRDS!

SO you think feathers are soft? Not when you kiss a buzzard at 100 knots. I learned a very valuable lesson at HT-8 this past summer. Humorous as it sounds, a bird was teaching pilots something about flying, and I was the unwilling recipient of the lesson. The incident was a bird strike – one of those occurrences that "always happens to the other guy."

It was a morning flight, following a routine brief and an uneventful preflight. The instructor pilot read the prestart checklist, and after the helmets went on, the visors went down. We received our clearance and departed the control zone. Suddenly, approximately 3 miles west of NAS Whiting Field while we were at 800 feet, 100 knots, a large turkey buzzard appeared inches from the windshield. The instantaneous and unexpected sighting of the bird made evasive tactics impossible. Even ducking my head was precluded by the violent implosion that followed as the bird crashed through the 1/8-inch Plexiglas and impacted squarely in my face, knocking me momentarily unconscious.

The instructor pilot took control of the TH-57 helicopter and was declaring an emergency while I regained my senses. Fortunately for both of us, the buzzard was dead and, ironically, had expired in my lap. My injuries were less serious than those suffered by the bird. My helmet was damaged, my visor and nose were broken, and I suffered a few facial cuts.

I have my visor to thank for my eyesight and from now on, it will be down any time I am piloting an aircraft. Strangely enough, one of my first conscious thoughts after the incident was a reflection back to that good ole NATOPS poster –



EJECTIONS
in High Surface Wind Conditions

By Maj R. J. Curtis, USMC
Aviation Safety Officer
MCCRTG-10

IT was a good time for kitefliers and windmills, but the prolonged period of high surface wind conditions that plagued the Southwest earlier this year, often in excess of 30 knots, resulted in crosswind conditions that were on the edge of, or exceeded, aircraft capabilities. Such winds can produce visibilities as low as 1/8 of a mile in blowing dust and sand. These hazards are fairly well known, but what is not as well known is an aircrewman's chances of incurring an injury after ejecting in such wind conditions.

In order to shed more light on the subject, a request for assistance was sent to the Naval Safety Center and the USAF Directorate of Aerospace Safety.

The Air Force responded with a detailed report covering 931 ejections during the period 1959-1963. It showed that a high percentage of ejections in surface wind conditions in excess of 16 knots resulted in major injuries or fatalities. Although this report provided valuable background data, it did not involve current generation ejection equipment and parachute release hardware. The installation of Koch fittings and an improved training program have apparently eliminated the problem in the Air Force. They have not experienced a parachute drag-related major injury since 1966.

The Navy/Marine experience has been somewhat different. The Safety Center computer printout of all ejections over land with a surface wind component in excess of 15 knots revealed seven drag occurrences, all since 1969 (see Table 1). There were no fatalities. A

Table 1. Ejections over land in high surface winds.

Degree of Injury *	Surface Wind Velocity (knots) 16-20	21-25	26-30	31+	Total
Major	1		2		3
Minor		2			2
None	2				2
Total	3	2	2		7

(* Injury classification as defined in OPNAVINST 3750.6K)

review of the major injuries revealed the following:

16 – 20 knots. A-7 pilot ejected at 14,000 feet. Was unable to locate his Koch fittings after landing. Was dragged 100 yards over rough terrain. Finally collapsed canopy.

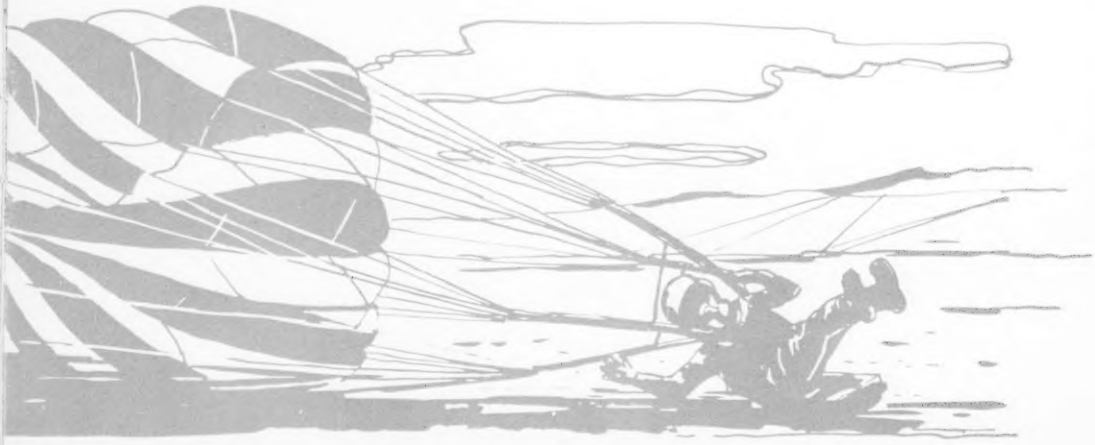
26 – 30 knots.

(1) A-4 ground level ejection. Pilot unable to locate his Koch fittings. Was dragged 300 yards. Finally located one Koch fitting, released it, and collapsed canopy.

(2) A-4 ground level ejection. Pilot was dragged more than 100 yards before ground personnel caught up with parachute and collapsed canopy. Pilot could not locate Koch fittings.

Without a doubt, Koch fittings provide a superior parachute release system to previously installed hardware. They release easily, regardless of the pressure being exerted by the billowing parachute. One factor, however, remains paramount in successfully coping with a high surface wind condition ejection. You must locate your Koch fittings, preferably prior to reaching the ground. In the case of a ground level ejection, you will have only an instant to locate the fittings before ground impact. If possible, the instant your feet touch the ground release both fittings simultaneously.

When was the last time you hung suspended in full flight gear and practiced locating and releasing Koch fittings? Not that easy, is it? Your hide may someday depend on just such an exercise. ◄



Civilian Flying for Naval Aviators

By LTJG William R. Hubbard
VC-2

EVERY aviator who wears the Navy Wings of Gold is imbued with the feeling that he is one of the best pilots in the world – and he probably is. Futhermore, that pilot feels that if he can land a screaming jet on the diminutive flight deck of a pitching ship, then he can certainly handle anything else in aviation.

But can he? Statistics apparently say no. In the past 5 years, naval aviators have been involved in 35 light plane accidents, and 10 of the world's finest fliers flew for the last time in a light civilian craft.

Does this mean that civilian flying is too dangerous, or that you as military pilots should not fly civil aircraft? Of course not. Civilian flying can be an exceedingly enjoyable pastime, and any graduate of naval flight training is more than capable of flying safely. But you have to be aware of certain pitfalls involved in private flying and understand the difference between private and military flying. This article will attempt to point out some relevant facts, and by examining some of the differences between military and civilian aviation, help clarify some areas of potential misunderstanding. In addition, it will help you, the military pilot, to better understand the civilian pilot. You may even want to join him.

Probably the best way for the military pilot to get into light-plane flying is through the local Navy flying club. The overall rates are usually lower than the corresponding commercial operator's, but perhaps more importantly, you will be associating with other fliers of your background who can help you with the problems peculiar to military aviators flying private aircraft.

If you do decide to leap into the light aircraft scene, there are several things you should consider to get your "mind right" and help ease the transition. For example, think of the airplane you now fly. Compared to a Cessna, yours just has to be a fast, heavy, and complex machine. By way of example, the maximum cruise speed of a Cessna 172 is less than the minimum landing speed

of an A-4! Moreover, due to the typical approach speeds and light weight (usually less than 3000 pounds) of most general aviation airplanes, they are more susceptible to the effects of wind. This is especially noticeable during taxi, takeoff, and landing. If your approach is more like a falling leaf than a speeding bullet, you will be affected by lighter crosswinds and require more heading correction to control drift – to say nothing of the effects of wake turbulence and wind shear. However, upon touchdown, you should be pleased to discover that you no longer require 8000 feet of runway to complete your rollout. Light planes are designed with full stall landings in mind, and that is usually slow enough to get out and walk.

In addition, most general aviation aircraft are quite simple compared to their military cousins. But just because the engine is the only moving part and the gear is "down and welded," don't forget that *all* aircraft are exposed to certain dangers; little things like engine failure, midairs, pilot error . . .

If you forget how much fuel your A-4 carries, you can look it up in your NATOPS Manual. The civilian aviator has a comparable pub to rely on, but if he wants to know anything that is more detailed about his airplane, he may be out of luck. The owner's manual that accompanies modern light aircraft often seems inadequate when compared to NATOPS, but if it is read carefully, the handbook should answer all of your questions about speeds, power settings, weight and balance, and everything else you should know to fly the airplane safely.

The lack of standardized owner's manuals is typical of the general lack of restrictions that accompany private flying. Read another way, that simply means more freedom. It also means potential problems.

Military aviation is highly organized, but civilian organization runs from very little (Navy clubs have the most) to none at all for a private aircraft owner. You

are your own Ops, Safety, QA, and frequently your own line division. You are not restricted as to the type of cargo you can carry (other than that classified as "dangerous" in Part 103 of the FARs), or who you can carry, or where you can take them. Nobody makes you wear a helmet either. Obviously, this freedom entails some additional responsibility.

The currency requirements of general aviation may also appear strange to you. Basically, there are few. While the military aviator trains on a regular basis, even in a proficiency billet, the civilian pilot must meet no requirement for formal training after he has been issued a license. All he must do to fly is keep current and take a flight review once every 2 years. (For a military pilot, a NATOPS check suffices for the biannual flight review.) The military aviator flying in civil aircraft should keep in mind that it is up to *him alone* to keep up to date on civil rules and procedures.

And there are a lot of them! Here is where the military pilot can get into trouble because there is considerable difference between the rules and regulations we fly under and those that govern the "little guy." Most of the FARs exclude military aircraft, and reading them for the first time makes the OPNAV 3710.7 series seem like a best seller. But while the FARs (a civil pilot should be familiar with at least Parts 1, 61, 71, 91, 97, and NTSB 430) may be the FAA's gift to insomnia, they are very important to a military-trained pilot. A partial list of rules that vary from the military include:

1. Currency requirements.
2. Choice of landing field.
3. Oxygen requirements.
4. Weather criteria for the selection of an alternate.
5. Determination of when an alternate is required.
6. Fuel requirements.
7. Requirement for and method of logging flight time.

For a private operator, there are no rules or restrictions on the following:

1. IFR takeoff minimums.
2. IFR approach criteria.
3. Flying VFR (other than the basic weather criteria).
4. Personal flying equipment.
5. Personal flight time per day.

Some rules that concern only civil pilots are:

1. VOR equipment checks for IFR operation.
2. Emergency locator transmitter requirements.
3. A long list of maintenance requirements (FAR 91, subpart C).

While nearly all of the civil rules are more lenient than their military counterparts, they are often written in an entirely different way. The differences between the two ways of determining when an IFR alternate is required clearly illustrate this point. While many of the military restrictions to flight do not apply, the military

pilot in a civil airplane should be aware of the many strictly civilian requirements that do apply to his new mode of operations.

In addition to the actual flight rules, the civil pilot has his own procedures handbook. This is the AIM (Airman's Information Manual) – the counterpart of the military FLIP planning document. A military light-plane pilot should be well-versed in all parts of the AIM which pertain to the kind of flying he wants to do. In the AIM you will find differences in many of the familiar preflight preparations required for both VFR and IFR flight, as well as procedural differences in many areas.

For example, your flight plan is filed in a different format (no IAF required), a flight plan is not required for a VFR flight, and the plan is usually given over the phone to a FSS in exchange for a weather brief. For stopovers of more than one hour, the filing of multiple flight plans (one for each leg) is recommended.

There are many differences in procedures between military and civil operations, and it is not the attempt of this article to discuss them all. However, I would like to mention some of the more common differences and identify those areas where military aviators make most of their mistakes.

- VFR flying (Remember that?) is alive and well in general aviation, but be sure to check the availability of radar services for VFR aircraft at your destination. Also, use sectional charts for navigation rather than ONCs or TPSs, since they provide more information.
- The civilian traffic pattern is square, not rounded, and you should call for landing clearance entering downwind rather than abeam. Your clearance will be based on your sequence in the pattern, and you are expected to establish your interval downwind rather than upwind. Additionally, there is no overhead pattern, so forget the hot break with mom and dad watching admiringly.
- You will often land at uncontrolled airfields. While rules and mandatory patterns are few, the standard entry is on the downwind leg at a 45-degree angle about midfield. Make left traffic and broadcast your intentions to enter and land on UNICOM, the frequency available to non-tower airports.
- Finally, there is the matter of radio phraseology. Everyone knows the difference between "Saufley Tower, Sioux Falls 134, solo radio check, over" and "Oceana Tower, Whizbang 101 to launch one fighter." But if your store of salty terms and expressions is turned loose on a civilian controller, some confusion could result. If you use "duty" for active runway, "parrot" or "IFF" for transponder, "one eighty" for base, and "sweet lock" for OK reception, you are likely to get a "say again" from the controller.

So now that you have been alerted to some of the differences between military and private flying and been convinced that it's a good deal, how do you go about getting a license? Basically, if you are an active or retired military pilot who is NATOPS current and has logged 10 hours as pilot in command within the last 12 months, you are entitled to a private or commercial license (your choice) simply by passing the written test given by the FAA. While "gouges" for this test abound, the only foolproof way to pass the test is to be familiar with at least Parts 1, 61, 71, 91, 97, and NTSB Part 430. *Besides, you need to know some of the information.* For any further information that you need about licensing procedures, contact the nearest FAA flight service station or general aviation district office. They are in the "white pages" under U.S. Government.

Once you have received your license, you will need to get a checkout in the type of airplane you want to fly. This can be done with any certified flight instructor, but try to find one who has military experience so that he can better understand your needs. Be sure you get a thorough checkout in all the performance envelopes of the airplane. If your CFI is a professional, he will insist on more than just "once around the patch." You should, too. Once you are checked out, practice and stay current. Work for smoothness because what may be safe for solo might scare the wife and kids. Also, try to avoid two classic traps: 1) the supreme confidence in your ability to fly anything, and 2) failure to give the proper respect to the capabilities and limitations of your light airplane.

Whether your ambitions lie in the acquisition of a flight instructor's license, taking the kids to grandma's house, or simply being able to fly without using the radio, general aviation can be a very satisfying experience. And this satisfying experience can also be a safe one, *but* you must apply the mature and professional approach to aviation that you demonstrate every day at the squadron. Your military expertise can be your ticket to a whole new concept in aviation. Try it – you'll like it! ◄

About the Author. LT(jg) William R. (Bill) Hubbard was designated a naval aviator in March 1973 and has accrued 1700 hours of military flying, mostly in S-2 series aircraft. Prior to his entry into naval flight training, LT(jg) Hubbard spent 4 years as a flight instructor at Ohio State University. His civilian ratings include commercial, SEL, MEL, Inst.; Certified Flight Instructor, SEL, MEL, Inst; and he has logged almost 3000 hours of civilian flying. He has received orders to VT-31, NAS Corpus Christi, where he hopes to continue active participation in the local Navy flying club in addition to his Navy instructor duties.

Inadvertent instrument flight in helos:

By Maj H. M. Whitfield, USMC
Commanding Officer
H&MS-36

WITHIN the past year there have been two CH-46 accidents as a result of pilot vertigo after inadvertent entry into IMC (instrument meteorological conditions). There have also been other helicopter accidents with circumstances similar to the ones mentioned. It would be easy to ascribe these accidents primarily to the pilots' lack of instrument proficiency, and this undoubtedly is germane. But there are other important related factors which warrant consideration. This article will focus on the CH-46, but the discussion has relevance to all helicopters.

The problems associated with helicopter pilot vertigo following inadvertent entry into IMC will be separated into three categories: the machine, the weather, and the crew.

The machine. Helicopters, unlike fixed wing aircraft, are inherently unstable and are probably the most vertigo-inducing machines designed by man. They have a variety of vibrations or oscillations, produce high noise levels, and can induce flicker vertigo by the action of sunlight shining through the rotating blades.

What's more, helo pilots are limited in their unusual attitude recovery practice. Despite acrobatic maneuvers performed for publicity purposes by company test pilots, helicopters – particularly transport helicopters – were not designed to routinely perform such maneuvers. As a result, helo pilots do not have the opportunity to practice all-attitude instrument flight and thus build their confidence in maneuvers other than normal flight.

Properly maintained and *balanced,* the CH-46 is a very stable and well designed helicopter for low altitude instrument flight. I emphasize balanced because many helicopters regularly and safely fly with uncomfortable beats caused by blades out of track, weak rotor dampeners, or weak automatic trim systems. Sometimes, malfunctions in the stability augmentation systems (which maintenance doesn't know of or hasn't had time to correct) make actual instrument flight more difficult.

Furthermore, the CH-46 has its all-weather limitations. It does not have operable deicing equipment for the engines or windshield. It does not routinely carry oxygen equipment, and it's a challenge to fly in turbulent IMC conditions.

The flight control system also poses some problems for instrument flight. Collective pitch lever and cyclic stick flight control feel in the CH-46 are introduced artificially through the use of centering springs and automatic trim system actuators. When the CDR (centering device release) button on the cyclic stick grip is depressed, the lateral, longitudinal, and directional centering springs are released, causing a loss of artificial feel (the stick is fairly loose). More important, a reference point is lost. When the button is released, the centering springs are again engaged in a new position, restoring artificial feel and establishing a new center of reference for the control system.

The CP (collective pitch) lever brake trigger operates in a similar fashion. The centering device springs may be manually overcome at any time; however, when control pressure is released, the controls will return to their original position.

It may be already apparent to the reader that the pilot's technique in using the CDR switch and collective pitch brake trigger under IMC is very important. More will be said later about the use of these switches.

The weather. Although inadvertent entry into IMC by a helicopter pilot could occur at any altitude, the most critical, and the one this article will focus on, is close to the ground or other obstacles such as mountains, tall trees, or buildings. Because of the helicopter's capability to hover or maneuver at very slow speeds, it is operated in peace and war to perform critical missions – sometimes in marginal weather. The difference between inadvertent and planned entry into IMC conditions is dramatic due to several factors. Inadvertent IMC entry causes problems because it:

- Is unexpected and usually not discussed or planned by the pilots.
- Requires immediate transition to instrument flying from a prior effort to remain visual.
- Usually includes strong pilot anxiety over collision with other aircraft or terrain.
- Often results in roughness or jerkiness on the flight controls by the pilot.
- Is usually entered with the CDR button and CP trigger release depressed, since this is the normal mode

while doing difficult maneuvers beneath a low overcast. This condition will probably continue at least into the initial stage of instrument flight.

- Causes poor instrument scan with possible fixation on one gage or another, sometimes resulting in neglect of the attitude gyro.
- Can contribute to poor cockpit coordination.

The CH-46 is very sensitive to pitch change and usually requires only a few degrees change on instruments to perform most maneuvers. A common problem with pilots who haven't flown instruments for a while, particularly actual instruments, is that they will depress the CDR button and move the cyclic to make a correction and shift their scan from the attitude gyro to other gages. Before they know it, they have overcorrected, sometimes ending up chasing the attitude gyro. During any traumatic experience in flying, there is a tendency to momentarily freeze or become fixated on one aspect of the event. Where are the hills? What heading should I fly? Should I descend or climb? All the while you are clenching the controls very tightly and stiffly.

The crew. What about cockpit coordination? Most transport helicopters fly with two trained naval aviators with instrument ratings. However, like fixed-wing transports and unlike two-place fighter and attack aircraft, the two individuals in the cockpit may have had little experience together. Too often the briefing before the flight focuses on who will do what in the event of a stereotyped emergency such as engine failure. Not enough training and cockpit coordination is devoted to the specific responsibilities of each pilot during an emergency or assisting each other under difficult IMC conditions. Also, what about familiarity with switches and controls from either seat? H2Ps are supposed to fly certain flights from the right seat. Some HACs think they are being nice guys if they offer the right seat to H2Ps even on a potentially demanding nontraining mission.

Most accidents result from a combination of factors all occurring at the worst time. We can minimize the possibility of helicopter accidents as a result of pilot vertigo following inadvertent entry into IMC conditions if we emphasize the following: 1) *Be mentally prepared* for the possibility of going inadvertently into IMC; 2) *Discuss it* in the brief prior to flying. During the mission the HAC and H2P should be talking to each other. If the pilot flying feels uncomfortable, or if he feels he may not be able to maintain visual flight, he should say so to prepare the other pilot. Constantly be mentally reviewing your course of action if you should go into IMC. Develop the habit of not continually depressing the CDR button or CP trigger release. Let the aircraft do most of the work for you on instruments. Usually, it will do a better job, and it will help you relax and scan more effectively, minimizing fixation.

Take every opportunity to practice simulated and actual instruments. Most helicopter cockpits resemble a greenhouse, and it's hard to truly simulate instrument flying. So utilize a helmet shade to assist. Where trainers are available, make use of them and include unusual attitudes, instrument takeoffs, and autorotations on instruments. Be especially careful flying instruments in a helicopter with a pronounced beat or oscillation. Know your own limitations, and don't press a mission beyond what you feel you are capable of handling, particularly with your *current* proficiency. ◄

Wild Ride

This article, originally published in 1960, is just as exciting and pertinent today. This is a vivid example of why it is desirable to descend to a mid-range altitude (10,000-20,000 feet) if a controlled ejection is your best course of action. – Ed.

An F-8U on a two-plane VFR flight from Massachusetts to South Carolina flamed out at 47,000 feet over North Carolina.

The pilot ejected over an extensive thunderstorm area estimated to have been 100 miles in diameter. The speed at the time of ejection was Mach .82 or approximately 210 knots IAS.

His dramatic 40-minute, 9-mile descent through a violent thunderstorm was widely and somewhat inaccurately covered in the nation's press. However, because of its great interest to APPROACH readers, here is a more detailed account of the pilot's experiences after ejection compiled from his statements during the accident investigation.

"MY first sensation was one of severe cold and extreme expansion as if I would explode. The cold rapidly changed to a burning, tingling sensation. I felt as if millions of hot pins were sticking in me. I sensed that I was tumbling and spinning like a pinwheel. My arms and legs were out and I could not get them in.

"In a matter of seconds I realized I had retained my helmet and mask but no longer had my visor, although I had been flying with it down because of the bright sunlight and reflection from the top of the clouds. I believe it was torn away on ejection.

"I opened my eyes and saw I was entering wispy clouds. I was going into the tops of the fleecy overcast that I had flown through just a few minutes before. I seem to remember saying to myself, 'Well, you're entering it and it's about 44,000 feet.' About this time I managed to get my arms in to my body.

"I looked down and noticed that I was absolutely forcing my torso harness. It looked like it was going to burst. My stomach popped out under my lifevest as though I was pregnant.

"I had the feeling that I fell, and fell, and fell, and fell for an eternity. My oxygen mask was beating against my face. I held my mask with my right hand. I put my left hand on my helmet which was pulling on the chinstrap as if it was going to pull off. My left hand was very cold and numb – it felt like somebody else's hand, not mine.

"Some time during the free fall, my right glove got in my way. It was inflated like a balloon so I let it go – just jettisoned it. I remember seeing it go off and I thought 'Why did I throw the glove away?'

"During the free fall I had the feeling of not being able to exhale; in fact, I seemed to have to work very hard to be able to inhale, but all I really had to do was open my mouth and in-rushing air just seemed to fill my lungs. At this time it was getting a little bit darker in the cloud.

"I had an urge to open the parachute but I told myself I was still far too high and if I did I would either freeze to death or die from lack of oxygen. I still had this tingling sensation, but I sort of had the feeling that I was slowing down and falling into denser atmosphere. I seemed to be getting a little warmer.

"I was still in the free fall and thinking about opening the chute. It was quite dark but I don't recall any great moisture or any great violence. It seems like while I was thinking about opening the chute, all of a sudden there was a terrific jolt and I knew the chute had opened. I looked up but by this time I was in such a dense, dark cloud that I couldn't even see my canopy. I reached up and got hold of the risers and gave them tugs on both sides; it felt like I had a good chute.

"From here on, my memory of what happened seems much better. I now clearly recall running out of oxygen and having the mask collapse against my face; I believe I disconnected it from the right side as I always do. At about this time I thought I definitely had it made and was going to survive. However, I noticed I was still bleeding from the nose, my right hand was cut, and my left hand was frozen numb; but the pressure was going and I was much more comfortable. Then the turbulence started and I realized I was entering the thunderstorm.

"As the turbulence started, I was pelted all over by hail. I fell a little bit more and then seemed to be caught in a violent updraft. I had the feeling that I was being tossed around . . . that I was actually going around in a loop and looping over my canopy – like being on the end of a centrifuge. I got sick from the turbulence and heaved.

"Sometimes I could see the canopy and sometimes I couldn't. The tossing and turbulence was so violent that it is difficult to describe. I went up and down . . . I was buffeted about in all directions . . . at times I felt like I was going sideways. One time I hit a very rough blast of

air – I went soaring back up and got in a very severe hailstorm. I remember the hail beating on my helmet. I had the feeling it would tear up my canopy. The next thing I knew I was in rain so heavy I felt like I was standing under a waterfall. I had my mask loose and the water was so great that when I tried to inhale I got water with the air like I was swimming. It seems to me that some time in the storm I noticed my watch and was surprised that it had stayed with me. I'm not sure but I think I could tell the time by the luminous dial . . . I believe it was around 1815.

"At one time during an up or down draft, the parachute canopy collapsed and came down over me like a big sheet. I could see my legs in the shroudlines. This gave me some concern – I thought maybe the chute wouldn't blossom again properly; and since the hail seemed to be larger now, I was afraid it might damage the canopy and put holes in it. I fell and the canopy blossomed again. I felt the risers and everything seemed all right.

"At this time, I looked down and saw what appeared to be a big black elevator shaft. Then I felt like I had been hit by a blast of compressed air and I went soaring back up again – up and down – sideways. How much of this soaring went on I don't know. I had the feeling that if it went on much longer I was not going to maintain consciousness. I was being tossed and beaten around and wasn't quite sure how much more I could take.

"The violence was so great that I thought if it doesn't stop soon, my gear will come apart . . . my chute will come apart . . . my straps will break . . . *I* will come apart. Stretching . . . twisting . . . slamming . . . the turbulence of this thunderstorm was so violent I have nothing to compare it with. I became quite airsick and had considerable vertigo. Again I had the feeling that I couldn't take much more of this; but if I could only hold out a little while longer, I would be falling out of the roughest part of the storm.

"The lightning was so severe that I kept my eyes closed most of the time. Even with my eyelids closed, there was a blinding reddish-white light when the lightning flashed. I felt rather than heard the thunder; it just about burst my eardrums. As I recall, I had the feeling of being in the upper part of the storm because the lightning seemed to be just flashes. As I descended, I seemed to see big streaks headed toward the earth. All of a sudden I realized that it was getting a little calmer and I was probably descending below the storm. The turbulence grew less, then ceased; and I realized I was below the storm. The rain continued, the air was smooth, and I started thinking about my landing.

"By now my shoulders and legs hurt pretty badly. I checked myself over again and thought I was OK. I kept looking down and said to myself, 'Under the storm you probably won't have more than 300 feet.' It was just like breaking out when you're making a GCA approach. First thing I saw was green; then I was able to see trees and knew I was very close to the deck.

"I remember seeing a field off in the distance and thought there must be people nearby. As I got close to the trees, I suddenly realized that there was a surface wind. I was being carried horizontally over the ground quite rapidly – maybe 25 knots. I oscillated about three times, then went into the trees. It seemed that my chute fouled in two pine trees and I continued in a horizontal position with the wind, then swung back to the left. I came crashing back through the trees like a pendulum and hit a large tree with my left side. My head, face, and shoulder took most of the blow. My helmet was knocked crooked, but I think it did a great deal to save me . . . The blow was so violent that it twisted my helmet back on the right side and pulled the chinstrap so tight over my Adam's apple that I had to loosen it when I got on the ground. Anyway, I came down with a crash. I slid down and landed on my side. I was cold and stunned but still conscious. At first I thought I had broken something and was paralyzed. Pretty soon, however, I was able to move my head and then my arms. I checked the time – it was between 1840 and 1845."

The pilot got up shakily, freed himself from his chute, and started to make his way out of the woods. He panicked momentarily, then recovered. Although it was quite dim in the woods, he observed a sawed-off tree stump nearby. He looked around; there were several others. Reasoning that there must be a logging road in the vicinity, he set up a square search. On the third leg, he hit the road. Following the road, he came to a clearing and a cornfield. Beyond the cornfield he saw automobile headlights. Making his way to the two-lane highway, he stood on the edge of the pavement and tried without success to flag down a car. Some 15 drivers went by without stopping.

"I must have looked like something really unusual – all wet and bleeding and standing out there in my flight suit in the dark and rain," he states. "I guess they figured I was drunk. Then after all these other cars had kept on going, a car came by and I thought I heard a boy say, 'There's a pilot, daddy.' "

The car went down the road, turned around, and came back. The pilot's ordeal was over. ◄

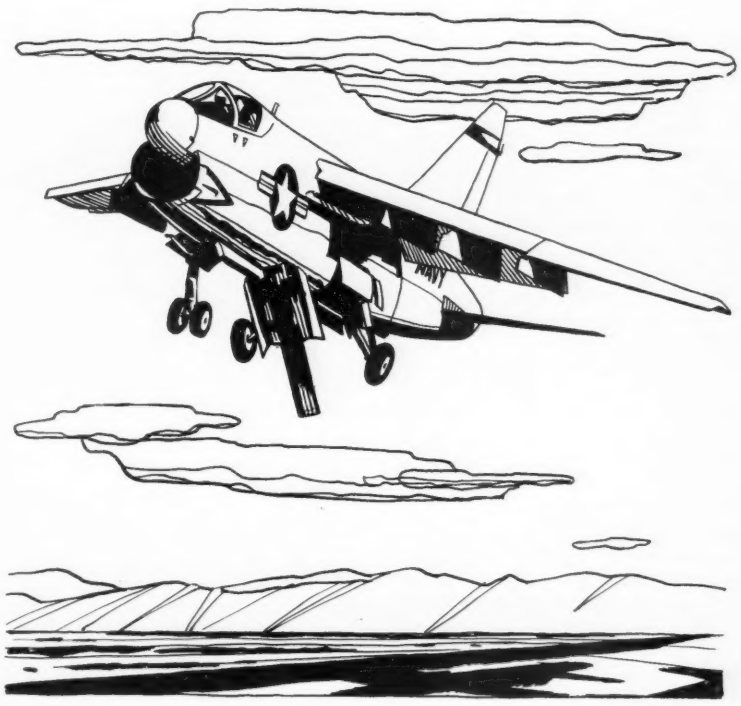
We all live under the same sky but we don't all have the same horizon!
Konrad Adenauer

Bravo Zulu

LT Tom McFall
VA-37

As skipper of an A-7E squadron, my days are filled with *good news and bad news.* On 1 December 1975, while onboard USS SARATOGA, I received word that Falcon 301 had diverted to an emergency field because of low oil pressure. The *good news* is related in the following Bravo Zulu for LT Tom McFall's superb handling of a time-critical emergency.

CDR G. K. Coyne, Jr.



TWENTY minutes after launch from the USS SARATOGA (CV-60), enroute to Lake George target in his bluenose *Corsair II,* LT Tom McFall observed the MASTER CAUTION and ENGINE OIL lights illuminate. The oil pressure gage indicated normal (normal range 27-53 psi), but the oil quantity had dropped to one-half. Moments later, the oil pressure dropped to 4 psi and the oil quantity then read low.

LT McFall was cruising at 14,000 feet. He set the power at 82 percent, extended the EPP, and turned immediately towards an emergency divert field, Sanford Municipal. He declared an emergency with Jacksonville Center and advised them of his intentions. Jacksonville Center's acknowledgement was immediate and included an advisory that Daytona Regional Airport (7500-foot runway) was slightly closer if it fitted his needs. A vector to Daytona Regional was also provided.

During the next 8 minutes of flight the oil pressure remained at 4 psi. Daytona Regional was about 35 miles away at the commencement of the vectored turn. During this time Jax Center provided runway orientation and length. LT Tom McFall transmitted to Daytona Regional on Guard and received landing clearance for the runway of his choice about 10 miles out.

The TF-41 engine was rumbling intermittently with increasing audibility and frequency. LT McFall executed NATOPS procedures flawlessly. To dissipate excess airspeed resulting from his descent, LT McFall pulled his nose up to slow to gear speed. He then blew his gear down and raised the gear handle to have use of his speed brake during the remainder of the approach. Touchdown and rollout were executed in textbook fashion with nothing more than slightly hot brakes, while watching RPM decay and TOT rise. LT McFall's thorough knowledge of emergency procedures, prior planning, decisive action, and the professional assistance from Jacksonville Center and Daytona Regional controllers saved his *Corsair II.* Well done! ◄

Letters

Re "Emergency Low-Visibility Approach Procedures for Aviation Facility Ships"

FPO, San Francisco – The helicopter emergency LVA procedures for aviation facility ships article in the OCT '75 issue of APPROACH are all well and good, but it would seem more appropriate to teach the procedures outlined in NWP-42A, *Shipboard Helicopter Operating Procedures*. If these procedures are considered inadequate, then a rapid-action change with justification should be submitted to the manager of NWP-42A. Perhaps the *change* was meant for inclusion in the forthcoming NWP-42B and wasn't mentioned through an oversight.

Many helicopter pilots have worked hard for years to develop the NWIP 41-6 series and to have it upgraded to the doctrine level of the NWP-42 series in 1970.

One significant difference in the approach pattern is that the NWP-42A procedure makes the approach right up the fantail, to make it easier for a ship to shine a searchlight directly aft and to allow the helo pilot plenty of chance to pick up the wake.

NWP-42A "sets forth the mandatory operational procedures and training requirements for the employment of helicopters."

LCDR D. E. Haan
HSL-31 Det Bravo

• You have the right idea in referring to NWP-42A. However, the article refers to this approach as "emergency." As the article indicates, this procedure is designed to allow a radar-assisted approach during conditions of low visibility – to provide an "emergency" landing capability when the only alternative is ditching. Informal liaison with NAVTACDOCACT indicates that the emergency LVA approach will appear in NWP-42B.

The radar-controlled IFR approach depicted in NWP-42A remains a valid approach for aviation facility ships when the ceiling and visibility are above 300 feet and ¾ mile. The minimum visibility for this approach will be changed to ½ mile in the forthcoming NWP-42B.

"Telling It Like It Is"

NAS Oceana – Congratulations to CDR Horst A. Petrich and APPROACH for "telling it like it is" ("CV Safety Organization – Reality or Lip Service?", JAN '76).

CDR J. O. Holland
Commanding Officer
VF-43

Stripe It or Paint It?

NAS Whidbey Island – One night while we were turning up one of our fabulous A-6 *Intruders* for a fuel droptank pressure leak gripe, I said to myself, "Self, if that tank does leak, we may have a bit of ye ole JP-5 on the deck." Self, always on the alert, said, "Yup, and maybe you should get a bearing on the nearest fire bottle – just in case." Lo and behold, mine eyes in the gloom of night couldn't find a fire bottle. Suggestion: All flight line firefighting equipment should have either a luminous strip of tape or paint that could easily be seen at night.

AO2 H. D. Mason
VA-95 Ordnance

• Your suggestion is already a requirement! NAVAIRINST 11320.2A, para 6.c, says it shall be done. You might have your squadron ASO request the station fire chief to honcho a program to mark all the fire bottles on the flight line at Whidbey.

Pre-think Emergencies

FPO, New York – I was most interested in the article, "Jet Blast Deflector Mishaps," in the JUN '75 issue of APPROACH. I saw the E-2C incident described from the bridge of the ship involved. The article said that the aircraft, after its hydraulic and pneumatic systems were damaged, began to roll forward toward the center of the flight deck. It was eventually stopped "when a squadron plane captain tossed a wheel chock under the port main landing gear."

One reason that this action was possible was the swift action taken by the ship's CO, CAPT R. F. Dunn, after the JBD hit the prop. Knowing that the ship listed to port (a typical prelaunch condition), and noting the inability of the E-2C pilot to stop his forward motion, the CO quickly ordered left rudder.

When the ship began a port turn, the slight heel to starboard actually leveled the flight deck and slowed the E-2C, allowing the plane captain to toss the chock under the port gear. The combined action of *both* the CO and the plane captain undoubtedly prevented a more serious mishap, such as the E-2C continuing to roll across the deck into other aircraft or over the side.

The point is that the OOD and other bridge watchstanders on carriers must always be alert to flight deck conditions and be ready to take immediate action to prevent or reduce damage in an emergency. Extensive pre-thinking of

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: APPROACH Editor, Naval Safety Center, NAS Norfolk, VA 23511. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

possible emergencies can materially reduce reaction time when the actual emergency arises. It's an old rule, I know, but an occasional reminder is worthwhile. Brain power is cheap compared to the high cost of aircraft or the priceless value of human life.

LCDR J. J. Jensen
Naval Weather Service

Re "SSS (Sorry Supply Support)"

NAS, Point Mugu – While reading the SEP '75 APPROACH, one of the letters, "SSS (Sorry Supply Support)," caught my attention. I read the letter and the answer from your staff and began to reflect on this problem that everyone complains or talks about, but few go beyond beating their gums to correct or alleviate.

It is certainly a fact that the lack of supply support is a major factor in our problems maintaining operationally ready aircraft – and the supply problem is universal in magnitude.

So, what is the problem and what are the solutions? Is our supply system totally inefficient? Do we resort to packratting? Do we continue to holler, or do we attempt to get smart and look for answers and exercise the system as we should? If you really examine the aircraft maintenance program and supply system, you will find that all the tools are there to produce the desired levels of efficiency – in supply response and maintenance management.

The problem is that too few people understand the interrelation between supply and maintenance, and without this understanding, we are bound to have confusion along with excessive delays. Now, I realize that I haven't been very specific, but do a little checking around and see how many maintenance control officers actually control and schedule their maintenance work vice shuffling VID cards.

How many maintenance officers and work center supervisors have any knowledge of FASOINST 4700.25 and NAVSUP 437 or keep a MILSTRIP desk guide handy? How often do we assign either the improper project code or wrong issue priority to a supply chit, let alone request followup or supply assist once we know the item status? By the same token, how many storekeepers are knowledgeable of maintenance procedures? Talk about weapons replaceable assembly, shop replaceable assembly, preexpendable bin, rotable pools, work priorities, A-stock, W-purpose codes, or issue priorities, and you'll find gross misunderstanding throughout the supply/maintenance organization.

We expect our petty officers and staff NCOs to manage personnel without teaching them how. How can we expect them to have the proper knowledge of the relationship of production equipment and supply?

I've proposed in the past, and propose again, that maintenance inspections should be exactly that – an inspection – and that personnel in maintenance control, work centers, and supply should be tested on both supply and maintenance procedures. The inspection team should exercise their authority and provide assistance teams to correct deficient areas. Additionally, more emphasis should be placed on supply in maintenance schools and on maintenance in supply schools.

I'm an old maintenance officer, and if I've learned two things in all these years, they are that: 1) supply types really don't hate us maintainers, and 2) if you possess the proper knowledge of supply, you get the desired response. However, as long as we remain uninformed, we can't complain about poor response because we don't possess necessary knowledge to tell supply what we want them to respond to.

CWO David G. Cotton, USMC

Re "Aren't All Helicopters Alike?"

NAS Norfolk – Your reply to LT David O. Dresser, USMC, in the Letters to the Editor in the JAN '76 issue of APPROACH was not too accurate. Greatballsoffire! Give the flyboys a break. In the first place, he's right. In the second place, OPNAVINST 3710.7G states that for night, overwater hover operations, helos shall be equipped with "operable stabilization and automatic hover equipment," and says nothing about coupled doppler. In the third place, lest we forget in the limelight of the H-3 SAR bird, we did have the good ole *Hookie Two* as the primary day and night SAR bird for the CVAs as long as we all can remember. No coupler either!

Tens of thousands of actual night approaches are "the proof in the pudding" that the helos without coupled doppler can do the job – and are in compliance with OPNAVINST 3710.7G. Let's apply the brakes once in a while, guys, and remember that the more we have, the better off we are; but nothing, and I mean NOTHING, beats knowledge of the machine and operating within its NATOPS parameters.

Keep those articles, rebuttals, re-rebuttals coming. The Fleet loves you even though it may not seem like it from time to time.

LT M. G. Cox
HSL-34

Increase *Nomex* Visibility

FPO, New York – Safety is strengthened by past accidents. This is unfortunate since accidents are a hard way to learn. Some months ago three crewmen of this squadron were injured when struck by a vehicle while sitting on the ramp. As I look back on my duties, I recall many near-misses when I was in the same position as my shipmates who were injured. It was night, the weather was lousy, the line vehicle had poor lighting; all the ingredients were in proper place for an accident. This is a combination all too familiar to crewmen, and we'd better do something to keep it from taking place again.

I suggest a slight modification to the *Nomex* flight suits. Sew strips of reflector tape on the suit so they'll be visible from any direction. (Strips can be put on arms, chest, back, and down the legs to reflect light while walking, sitting, or working.) Local modifications can be accomplished by PRs, and to take it a step further, manufacturers should add it to future production. This would reduce the possibility of injury to crewmen and, better yet, might save a life. I think it would also aid in locating crewmembers after a crash/ditching situation.

Please give consideration to this idea.

ADJC Carl Jordan
VQ-4 Safety Chief

• There is no doubt your idea would help a lot in the example you gave. The reason for the color of the *Nomex* suits is to enhance escape and evasion. CNO decided only one flight suit would be made available for all circumstances, and sage green best meets *all* requirements. However, this raises a couple of questions. "From whom are we now escaping and evading?" and "Why can't strips of reflective material be sewn on until we have to play hide-and-seek again?" We see no reason why squadrons shouldn't adopt this idea on a local level. In fact, it seems like a good idea. ◄

Our Readers Respond

Unintentional Wheels-Up Landings

NAS Kingsville – After reading the article on unintentional wheels-up landings, "No Letup," in the JAN '76 issue of APPROACH, I believe I have derived a simpler, better system than the one used by the Royal Australian Air Force. Let me briefly describe it in layman terms. I can also provide specifics and technical information.

Basically, my idea works as follows: When the wheels are down and the aircraft transmitter is keyed, a tone-burst of one-half second is generated at the start of the transmission. This tone is audible to the pilot and to the ground controller. Since the tone-burst is on a specific frequency, for example, 950 hertz (the same idea as a touch-tone telephone), the received tone can also be used to illuminate a light on a controller's panel if his receiver is equipped with a tone decoder. Even without the decoder, the controller will still hear the one-half second "beep" each time the aircraft transmitter is keyed, provided that the wheels are down. The tone could be made inaudible if all receivers were equipped with the tone decoder.

Advantages of this system over the RAAF system are as follows:

- The only aircraft modification is the addition of one wire from the gear-down microswitch wiring to the aircraft transceiver. All other modifications are internal in the transceiver.
- This does not further burden the pilot with one more thing to do prior to landing, i.e., activate the "beep-beep" switch used by the RAAF. On any radio transmission, the position of the landing gear can be determined automatically. (Tone present indicates landing gear "down.")
- The problem with high density traffic mentioned in the APPROACH article is eliminated. No additional transmissions are required.
- Since the tone is only of one-half second duration, it does not interfere with communications. (It can be longer, if desired.)
- No cockpit modification is required. The installation of the one wire in the aircraft can be accomplished at the organizational level with negligible cost.
- The transceiver modification can be accomplished at the intermediate maintenance level with an estimated cost of $25 per transceiver.
- Tone decoders for one specific frequency are commercially available at a cost of approximately $50 each. When connected to the receiver audio (e.g., tower or approach control), they can be used to illuminate a light for a few seconds. This light provides a backup for the tone that is received. (Humans would probably have a tendency to forget to listen for the tone from time to time.)
- Without any modification to the receiving station, a positive indication would still be received (tone).

I have all the technical details available to anyone interested. Inquiries should be sent to the Operations Officer, NAS Kingsville, TX.

CDR G. S. Wren

NAS Lemoore – The JAN '76 APPROACH magazine has an interesting article on unintentional wheels-up landings. Ever since I made a gear-up pass as a busy and confused student handling a single-engine approach in an S-2, I have been interested in the situation and how to prevent it.

The editor's comments concerning the RAAF's device are well deserved. However, there is another factor to be considered. If the "beep" is heard when the gear is down, it is conceivable that the controller may hear "beeps" 30 to 40 times an hour or more during a bounce period. Would it not be more advantageous to "reverse the wires" so that the "beep" is heard if the button is *not* pushed, or if it is pushed and the gear is not down? After all, which is more likely to be noticed – no "beep" when the controller hears hundreds or thousands a year, or a "gear-up beep" when he has heard none for an extensive period of time?

In any case, NATOPS procedures, challenge and reply, checklists, safety lectures, or Grampaw Pettibones' ranting and raving will not prevent this type of accident, and until the Navy does something about it, APPROACH may as well start drafting an article entitled "No Letup in 1976, Either" for the next January issue.

LT Dennis W. Sniffin, USNR-R
LIGHTATKWG 120

NAS Somewhere – "There are those who have and there are those who will . . . "

Here's another way to look at it: How many Naval aircraft are equipped with AOA indexers which will illuminate *only* if all the gear are DOWN and LOCKED? Since the indexers are used as the pilot's primary indicator of speed during approach in an aircraft so equipped, DON'T LAND WITHOUT THE INDEXERS! Not on the first approach, anyway. Wave off – and when was the last time you've done that, by the way –

and regroup. Recheck everything on a leisurely downwind. Be *sure* it's the indexers that aren't working and not your brain!

I. Have

P.S. I know you want your letters signed, but I'm still too ashamed.

NAVAIRSYSCOM – We have investigated many of the possible solutions that were recommended, since the early fifties, for the reduction/prevention of wheels-up landings. The concept pertaining to the Australian/French system has been discussed with numerous Navy pilots and air traffic controllers, and there appears to be a general agreement that the system can be effective, with a minimum disruption, if any, in Fleet operations and operations at civilian airfields.

Alternatives to this same concept included a management-by-exception philosophy and the use of an ultrasonic signal. The first alternative would involve tone activation when an aircraft is otherwise configured for landing, but the gear are still up. This, of course, would reduce the amount of tones the air traffic controller would have to contend with, but with numerous aircraft in the pattern the "culprit" could not be readily identified (unless a complex and expensive communications coding system could be employed).

The second approach, the use of an ultrasonic signal, was developed by a company in Great Britain. The advantage of ultrasonic signals is that normal communications are not affected. However, specialized equipment is required on each aircraft, and specialized detector units would be required at each ground/ship station to decode the signals.

I won't go into all the ideas that were reviewed/evaluated by NAVAIR, as well as Navy Labs and Fleet personnel, because the files are quite extensive. I think that we must give serious consideration to the Australian/French system because it has been successful for the French Air Force for 10 years, and the RAAF who have employed it in their *Mirage III* fighters for 8 years. Sure, it might involve a little reshaping of our landing procedures (which you referred to in your editorial comment in the JAN '76 APPROACH), but if procedures are all we are concerned with, maybe we ought to look at the other side of the coin – the operational impairment at any given field/ship that results from one aircraft landing wheels-up.

Howard Arnoff
AIR-5313A2

• Mr. Arnoff sent us a copy of a letter from NAVAIRSYSCOM to OPNAV from which we quote a part:

"The Australian/French system is simple, inexpensive, and could therefore be standardized worldwide. It provides an external check of the landing gear almost anywhere, in any weather, and during any time of the day without additional manpower or costly aircraft/ground equipment. Technical evaluation of the system is considered necessary. Specific cost and installation data can be furnished if desired."

Luke AFB – I enjoyed "No Letup" in the JAN '76 APPROACH, particularly since I have been pondering the problem of unintentional gear-up landings for some time. To me, the solution seems simple, inexpensive, and foolproof. All in the world we have to do is install an electrical solenoid on the fuel control which would preclude throttle reduction beyond a predetermined setting unless the gear were DOWN and LOCKED. The approximate restrictive setting would be the minimum power required to fly at V_{min}, straight and level flight with speed brakes down, gear and flaps up, at, say, 5000 feet. The exact setting would need to be determined by tests. Under these conditions, it would be impossible to fly a landing approach maintaining anywhere near proper airspeed unless the aircraft were configured properly.

I can think of no case in the course of normal flying operations where this system would interfere in any way; however, if it should, it would be a simple matter to wire the solenoid so as to defeat the system using the normal gear warning cutoff button.

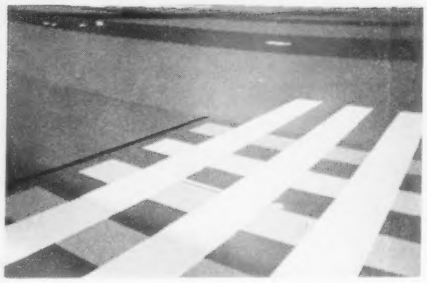
Lt Col Frank P. Jepson, USAF
Chief of Safety, 26th Air Division

• The net effect of this action would be to raise the minimum RPM available to the pilot to somewhere above idle. While this fix might be effective for certain Air Force aircraft (T-33, F-106) and certain Air Force operations, it is difficult to imagine this concept applied to all tactical jet operations. Just a few of the areas that come to mind where idle power is desirable are idle descents to save fuel, rendezvous, ACM maneuvering, high-angle glide bombing, and formation flying at low altitude and low airspeeds (GCA pattern prior to dirty-up). Some aircraft and engines do have minimum RPM limitations, but many do not. Those pilots flying aircraft that do not will not want to have a restriction placed on them that will reduce their operating envelope.

Perhaps an even greater objection to this system is that it wouldn't be effective with all Navy aircraft. The A-4, for example, takes 85-86 percent to meet the parameters described by Lt Col Jepson. In a landing configuration, less gear, power required is about 85-88 percent. Thus, the proposed system would not provide a safeguard under all conditions. ◄

Vol. 21 No. 10 NAVAIR 00-75-510

approach



Pg. 10

Pg. 14

CONTENTS

1 Spin/Departure Training: A Must!
By LCDR Walt Honour
6 A Retarded Approach to Physical Fitness
By LT A. R. Thompson
9 Electrical Fire!
10 A (Computer-generated) Picture Is Worth 1000 Words
By LT C. L. Evans
12 Reinstall VORs in Tactical Jets
By CAPT Joseph F. Scholle
13 SAR Alert!
By LCDR C. D. Shields, Jr.
14 Feathery Midair
By ENS Gary A. Kohler
16 Ejections in High Surface Wind Conditions
By Maj R. J. Curtis
18 Civilian Flying for Naval Aviators
By LTJG William R. Hubbard
22 Inadvertent Instrument Flight in Helos: DANGER!
By Maj H. M. Whitfield
24 Wild Ride

Pg. 18

DEPARTMENTS

4 Air Breaks
27 Bravo Zulu
28 Letters
30 Our Readers Respond

32

A Naval Safety Center Publication

Our product is safety, our process is education, and our profit is measured in the preservation of lives and equipment and increased mission readiness.

PURPOSES AND POLICIES/APPROACH presents the most accurate information currently available on the subject of aviation accident prevention. Contents should not be considered as regulations, orders, or directives and may not be construed as incriminating under Art. 31, UCMJ. Photographs used to illustrate articles in APPROACH do not necessarily reflect the actual aircraft, air stations or ships that are described in the text.

PHOTOS/Official Navy or as credited. Non-naval activities are requested to contact NAVSAFECEN prior to reprinting APPROACH material.

CORRESPONDENCE/Contributions are welcome. The right to make editorial changes to improve the material without altering the intended meaning is reserved. Reference to commercial products does not imply Navy endorsement. Views of guest-written articles are not necessarily those of NAVSAFECEN.

DISTRIBUTION/Requests for distribution changes should be directed to NAVSAFECEN, NAS Norfolk, VA 23511, Attn: Safety Publications Department. Phone: Area Code 804, 444-1321.

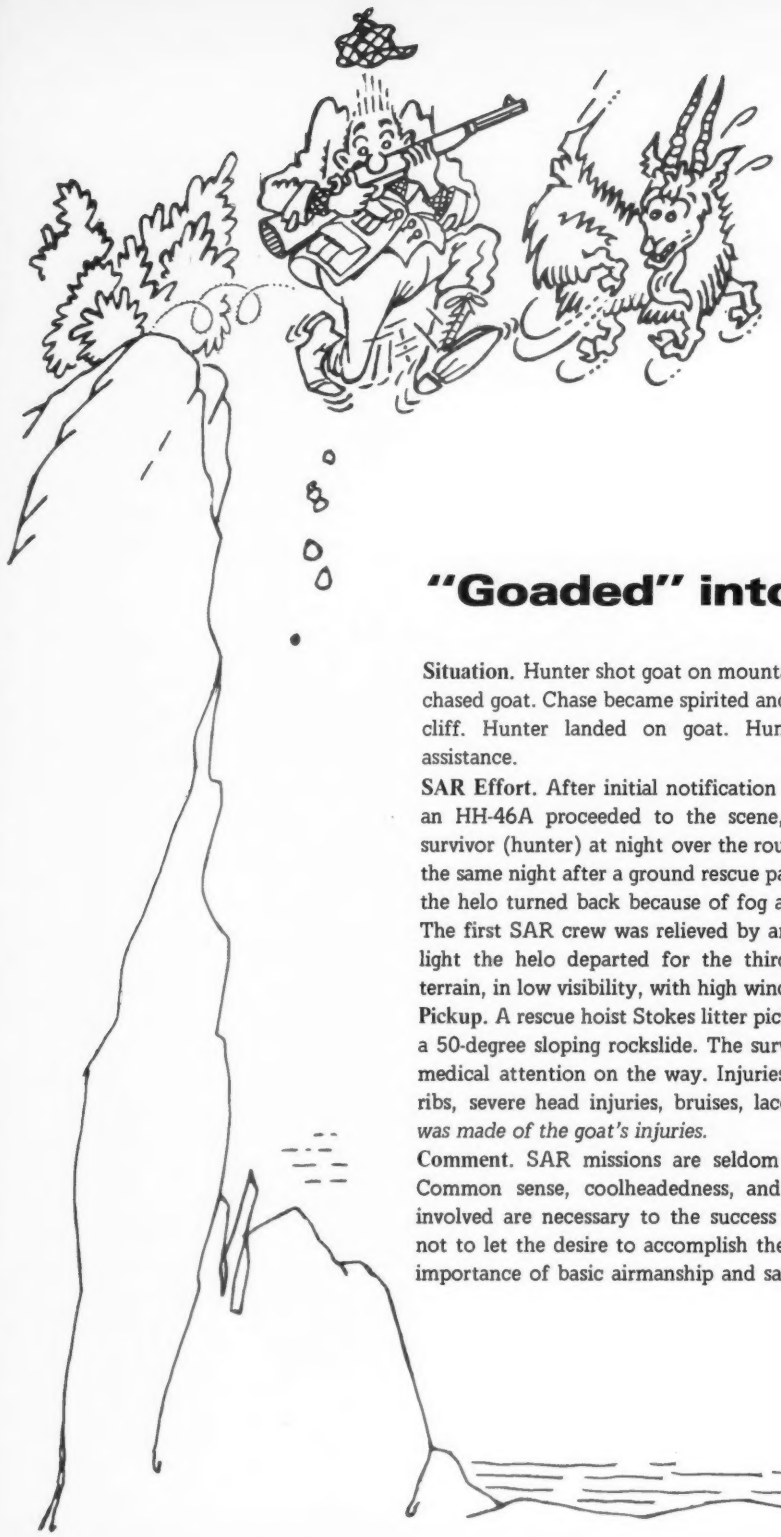
PRINTING/Issuance of this periodical approved in accordance with Department of the Navy Publications and Printing Regulations, NAVEXOS P-35. Library of Congress Catalog No. 57 60020.

CREDITS/With the recent retirement of the last Fleet S-2 squadron, the S-3 *Viking*, as portrayed on this month's cover by Lockheed artist Chuck Hodgson, has successfully taken over as the mainstay of the carrier-based ASW effort.

RADM Wm. H. Ellis
Commander, Naval Safety Center
CAPT W. F. Rau
Chief of Staff
CAPT Robert Lewis
Director, Aviation Safety Programs

CDR J. D. Connery, Editor-in-Chief
LCDR Barry Patterson, Publications Editor
LT Richard P. Shipman, Editor
Robert Trotter, Art Director
C. B. Weisiger, Helicopter Writer
R. L. Marcoux, Maintenance Writer
Blake Rader, Illustrator
Jack LaBar, Illustrator
Catherine M. Salas, Editorial Assistant

U. S. GOVERNMENT PRINTING OFFICE: 1976—635-273/14



"Goaded" into a SAR rescue

Situation. Hunter shot goat on mountain. Goat was uncooperative and hunter chased goat. Chase became spirited and both goat and hunter fell over 75-foot cliff. Hunter landed on goat. Hunter's son hiked down mountain for assistance.

SAR Effort. After initial notification of the situation, the pilot and crew of an HH-46A proceeded to the scene, but they were unable to locate the survivor (hunter) at night over the rough terrain. A second attempt was made the same night after a ground rescue party had reached the survivor. This time the helo turned back because of fog and rain showers causing poor visibility. The first SAR crew was relieved by another crew because of fatigue. At first light the helo departed for the third time, locating the hunter in rough terrain, in low visibility, with high winds, snow, and rain showers.

Pickup. A rescue hoist Stokes litter pickup was made by hovering 40 feet over a 50-degree sloping rockslide. The survivor was flown to a hospital, receiving medical attention on the way. Injuries sustained by the hunter were broken ribs, severe head injuries, bruises, lacerations, and contusions. *No mention was made of the goat's injuries.*

Comment. SAR missions are seldom routine as to location and situation. Common sense, coolheadedness, and a practical evaluation of all factors involved are necessary to the success of many SAR efforts. It is imperative not to let the desire to accomplish the rescue overcome or detract from the importance of basic airmanship and safety awareness in flying the helicopter.